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Annual Report of the Department of Agriculture Bengal

For the Year

1925-26

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DEPARTMENT OF AGRICULTURE, BENGAL.

No. 15192.

From R. S. FINLOW, Esq., B.Sc., F.I.C.,

Director of Agriculture, Bengal,

To the SECRETARY to the GOVERNMENT of BENGAL,

Department of Agriculture and Industries

Dated Dacca, the 3rd September 1926.

Sir,

I have the honour to submit herewith the Annual Report of the Department of Agriculture, Bengal, together with the reports of the expert officers and of the farms for the year 1925-26.

I have the honour to be,

Sir,

Your most obedient servant,

R. S. FINLOW,

Director of Agriculture, Bengal.

TABLE OF CONTENTS.

Report of the Department of Agriculture, Bengal.

	PAGE.
Section I.—Agriculture	1
Section II.—Sericulture	23
Section III.—Miscellaneous	27

REPORTS.

I.—Economic Botanist to the Government of Bengal	i
II.—Fibre Expert to the Government of Bengal	vii
III.—Second Economic Botanist to the Government of Bengal ..	xv
IV.—Agricultural Chemist to the Government of Bengal ..	xix
V.—Deputy Director of Agriculture, Eastern Circle	xlv
VI.—Deputy Director of Agriculture, Western Circle	li
VII.—Deputy Director of Agriculture, Northern Circle	lxiii
VIII.—Chinsura Farm	lxx
IX.—Burdwan Farm	lxxxvii
X.—Bankura Farm	xciii
XI.—Suri Farm	xcviii
XII.—Berhampore Farm	civ
XIII.—Gosaba Farm	cxiv
XIV.—Jessore Farm	cxvii
XV.—Mallick Agricultural Farm	cxxii
XVI.—Amarpur Bimala Agricultural Farm	cxxiv
XVII.—Mahishadal Farm	cxxvi
XVIII.—Dacca Central Farm	cxxvii
XIX.—Comilla Farm	cxlvii
XX.—Mymensingh Farm	cliii
XXI.—Barisal Farm	clviii
XXII.—Faridpur Farm	clxiii
XXIII.—Kishoreganj Farm	clxvii
XXIV.—Dhanbari Farm	clxxii
XXV.—Jamalpur Farm	clxxiv
XXVI.—Jaidebpur Farm	clxxvii
XXVII.—Baratia Farm	clxxix
XXVIII.—Bramanbaria Court of Wards Farm	clxxx
XXIX.—Gayhatta Farm	clxxxii
XXX.—Durgapur School Farm	clxxxiii
XXXI.—Rangpur Cattle Farm	clxxxiv
XXXII.—Rangpur Demonstration Farm	ccii
XXXIII.—Burirhat Tobacco Farm	ccxii
XXXIV.—Rajshahi Farm	ccxvi
XXXV.—Bogra Farm	ccxxvi
XXXVI.—Pabna Farm	ccxxxiii
XXXVII. Dinajpur Farm	ccxxxviii
XXXVIII.—Kalimpong Farm	ccxl
XXXIX.—Sericultural operations in Bengal	cclx
XL.—Sericultural School, Rajshahi	cclxx
XLI.—Glossary	cclxxii

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ANNUAL REPORT OF THE DEPARTMENT OF AGRICULTURE, FOR THE YEAR 1925-26.

SECTION I—AGRICULTURE.

Administration.—I was in charge of the Department during the year, except from 2nd July 1925 to 18th February 1926, when I was on leave, Dr. G. P. Hector, First Economic Botanist, officiated for me during this period.

A new post, that of Assistant Director of Agriculture, was created, and the post of Fibre Expert was merged in it. Mr. K. McLean was appointed to this post. He held charge of the office for the period from 27th May 1925 to 28th February 1926 when he went on eight months' leave, Mr. F. Smith was in charge of the office of the Deputy Director of Agriculture, Eastern Circle, up to 26th November 1925 when he went on three months' leave. On his return, he was appointed to act as Assistant Director of Agriculture from 7th March 1926.

Dr. G. P. Hector continued as Economic Botanist, except for the period from 2nd July 1925 to 18th February 1926, during which Mr. S. G. Sharangapani, Assistant Economic Botanist, held charge of the office of the Economic Botanist.

Mr. D. Dutta held charge of the office of the Second Economic Botanist, except during the period from 24th August 1925 to 23rd December 1925 when he was on leave, and Babu Tara Nath Roy, Field Assistant to the Fibre Expert, took his place.

Mr. J. N. Sirkar officiated as Deputy Director of Agriculture, Northern Circle, up to 26th November 1925, and as Deputy Director of Agriculture, Eastern Circle, during the rest of the year.

Mr. A. R. Malik was temporarily appointed as Deputy Director of Agriculture, Northern Circle, for eight months from 15th March 1926.

Rai Sahib J. K. Biswas, Superintendent of Agriculture, was on special duty in connection with tobacco work during the year under review, except for the period from 27th November 1925 to 14th March 1926 when he held charge of the office of the Deputy Director of Agriculture, Northern Circle.

Mr. H. P. Mitra, Superintendent of Agriculture, held charge of the Chinsura Farm up to 10th September 1925 when he went on leave.

Miss M. L. Cleghorn held charge of the office of the Third Superintendent of Sericulture, except for the period from 10th November 1925 to 9th December 1925 when she was on leave and Miss O. Cleghorn officiated for her.

Tours.—I spent 47 days and Dr. G. P. Hector 87 days on tour during the year.

Honours conferred on members of the Department.—During the year the title of "Rai Sahib" was conferred on Babu Debendra Nath Mitra, District Agricultural Officer, Faridpur. Deben Babu is an energetic officer, who has done good work in his own district, and thereby largely increased the prestige of the Department of Agriculture

among all classes of the population. His example is a commendable one, and he is to be congratulated on the honour which has been conferred on him.

Obituary.—With much regret I have to report the deaths of the following officers:—

Babu Pramatha Nath Sen Gupta, District Agricultural Officer, Bogra. Pramatha Babu was trained at Sabour and entered the service in June 1914. As District Agricultural Officer of Bogra, he did excellent work, especially during the relief operations after the flood in the Rajshahi Division in October 1922. In this emergency he proved himself an officer of energy and resource, and his death is a great loss to Government and to the people whom he was so loyally serving. Government takes this opportunity of sympathizing with the deceased officer's relatives.

Babu Ramapada Chatterjee, Agricultural Officer, Khulna, died in January 1926. He was trained in Sabour and officiated in Class I of the Subordinate Agricultural Service from time to time after January 1922. His work was excellent.

Agricultural Education.

Dacca Agricultural Institute.—Some discussion arose during the year regarding the entrance qualification for the Institute. In 1923, it was unanimously agreed, after mature discussion, that, for the diploma, the standard should be Intermediate Science *plus* one year at the University of Dacca, the latter year to be devoted to special training in pure science. It has now been proposed that Matriculation shall be the entrance standard. As the average Matriculate does not touch science in his school career, we are faced with the proposition that boys with no scientific training whatsoever are expected to enter on a course which definitely assumes a certain knowledge of pure science. A further difficulty would be that the old arrangement assumes collaboration between the Dacca University and the Department of Agriculture in the matter of higher agricultural education, in which the University teaches the pure science and the Agricultural Department the agriculture. But the University Act does not provide for teaching any standard of pure science below Intermediate science. The alternative therefore is that an additional large sum should be spent in constructing laboratories at the Institute, when it must be admitted that the Institute cannot hope to equal the quality of pure science teaching, or the resources of the science laboratories, of the Dacca University, only three miles away.

In the last year's report it was pointed out that sufficiently trained District Agricultural Officers are essential if the very great potential value of the research work at Dacca is to materialize to the benefit of the people of Bengal. It seems necessary to reiterate this, for there is still a considerable body of misinformed opinion which apparently holds that little or no scientific training is needed as a basis for a comprehensive agricultural education. No greater mistake could be made.

The above refers specially to the proposed diploma course at the Institute which would aim at turning out graduates capable, with further experience, of becoming competent scientific farmers on their

own account, managers of estates, or subordinate officers of the Agricultural Service with a reasonable knowledge of their subject. The Institute would also provide occasional "refresher" courses for officers already in the Agricultural Department.

It is further hoped that, eventually, officers of the subordinate executive service and of the Co-operative Department will take a short course at the Institute if and when it materializes. Courses for Revenue Officers are actually held at the Lyallpur Agricultural College in the Punjab. It would be of great value to an executive officer to have some knowledge of the agriculture of the country which he is helping to administrate, and such a course as the Institute could provide would interest officers in agricultural improvement and make them a powerful lever in this direction.

For the present, the training of Agricultural Officers is being carried out at the Dacca Farm, where the officers, who have already been through the old inadequate course at Sabour, are attached in turn to the different research sections and later, as overseers, to the farm. Thus, in addition to practical training, they get a good first hand knowledge of the research done by the experts at Dacca, which will be of much value to them in their work of introducing departmental improvements into the districts.

Secondary Agricultural School, Dacca.—The secondary agricultural school at Dacca caters for a lower standard of agricultural education. Admission of some students of the latter type is also provided for in the Institute scheme. They would not however be eligible for an Institute diploma.

The number of *bona fide* students at the Dacca School has shown no tendency to increase, in spite of advertisement and of the fact that students who need funds to support themselves are allowed a stipend of Rs. 10 per month. In the vacant places twelve departmental demonstrators (Lower Subordinate Service) are undergoing a "refresher" training which should help them considerably when they return to their normal work in the districts.

Introduction of agriculture into the curricula of ordinary schools.—Last year's report described the progress of the efforts which had been made towards the introduction of agricultural classes into the curricula of middle and high schools in Bengal. It is satisfactory to note that the scheme has now received Government approval. As it is entirely a matter of education, its working has been handed over to the Education Department; but the Department of Agriculture will train teachers, share inspection and help generally wherever possible. A start has already been made with the selection of 15 schools at which details of the scheme will be worked out. One suitable master of agricultural parentage will be taken from each school for training at Dacca. About 70 schools have either already commenced agricultural classes or have expressed anxiety to do so, and the selection of 15 schools from so large a number will be a matter of some difficulty.

It is necessary to repeat here that the scheme for agricultural classes in ordinary schools has not the definite intention of turning out trained farmers. This would be impossible; but the classes are intended to introduce a nucleus of practical training into the present purely literary curriculum, in order to get over the almost universal objection on the part of school boys to any form of manual work, and to give a bias towards agriculture. There is a wide-spread and well justified conviction in Bengal that such a change is necessary.

Agriculture will be taught in the middle schools and in classes V, VI, VII, and VIII of the high schools, but not at present in the matriculation classes IX and X. Attached to each school will be a small area of land which may, according to the resources of the school, only be a garden of one or two bighas or, preferably a small farm, which may extend to 10 or 15 bighas. The greater part of the work on the land will be done by the boys, and it is hoped that ultimately the area will be almost, if not quite, self-supporting. It follows that every boy in a middle school or the middle department of a high school, will pass through a four years' course in the simple theory and practice of improved agriculture, which will be as much part of his lessons as Geography or Mathematics. Thus, apart from the mental value of the practical training, the boy cannot fail to grasp a number of salient facts of modern agriculture, which will stand him in good stead in later life. Incidentally it is believed that the school farms will become most valuable centres for the demonstration of agricultural improvements.

It must be clearly understood that the above is not untried theory, and that Bengal is not the pioneer in this scheme. There are already 27 middle school farms working in the Punjab; the scheme has been recommended by the Board of Agriculture in India for adoption in other provinces, and Bombay and the United Provinces have already started working on the same lines.

Even in Bengal there are at present eight high schools and middle English schools, where agricultural classes are a regular part of the curriculum. These schools have taken the step on their own initiative, and they are positive proof if such were needed, not only of the faith which is in those in charge of them, but of a sane and far-seeing public opinion, which has already been referred to. It should be further noted that reports from Inspectors of Schools indicate a definite awakening of interest in the introduction of agricultural teaching into the general curriculum.

Rai Manmatha Nath Pal Bahadur of Amarpur has been an enthusiastic pioneer in Bengal, and a visit to Amarpur High English School, Burdwan District, where the Rai Bahadur lives is a very pleasant revelation of what the policy is capable of. Agricultural classes at Amarpur were established in 1919-20 as a result of collaboration between the Rai Bahadur, the Hon'ble Mr. Birley, then Collector of Burdwan, and the writer. Recently ex-students of Amarpur have established a daughter institution to be run on the same lines at Barabainan, Burdwan District.

One point must be insisted on. The scheme is much more far-reaching than may appear at first sight, for it aims for changing the mentality of a nation. It has also to be realized that it will introduce a quite new element into the schools, and that on this account it will certainly be opposed to some conservatism and even prejudice. On the latter account, if it were only an experiment, its success might be open to doubt; but fortunately the scheme is now Government policy, and the first schools into which the agricultural teaching is introduced are not experiments, but instruments for working out the details of a settled policy.

There can be no doubt that the scheme is a logical one, for it is to agriculture that Bengal must look for the major portion of any economic progress that it can make in the near future. The research work at

Dacca has already yielded results which, applied to the full, are capable of materially increasing the wealth of Bengal. The main difficulty now is to place the information in the hands of the cultivator at a quick enough rate, and every possible agency is being exploited. The problem will be largely solved for the next generation by teaching agriculture as a subject in the general curriculum of schools; for a boy who has been brought up on ideas of improved agriculture will naturally have little prejudice and will take up improvements he is already familiar with when he returns to the land, as an increasing number will do. The policy will also have its immediate effect, because each school farm will be a demonstration centre for the neighbourhood. Moreover the cost is reasonable.

An almost certain effect of the system will be a demand for higher agricultural education, firstly in the secondary schools like that at Dacca; also in colleges, like the Dacca Agricultural Institute collaborating with the Dacca University; and the projected agricultural faculty in the Calcutta University, which may also have the assistance of the Department of Agriculture.

One criticism which has been levelled at the scheme is that it will only teach the middle school boy, and not the larger number who never get beyond a primary school. This is true, but to attempt to teach agriculture to every primary school boy would be a colossal task and correspondingly expensive. In the meantime if we can succeed in making each middle school, and each high school, a centre for demonstration of agricultural improvement, we shall have gone a long way towards bringing every cultivator, whatever his standard of education, into visual contact with departmental improvements in agriculture.

Finally it is to be remarked that the Punjab scheme contemplates teaching what is called "rural science" by which is meant, not only agriculture but also the elements of co-operation, sanitation, etc., the general practice of which will tend to make village life more acceptable.

The primary school boy is not being neglected, and attempts to teach nature study still continue. Little progress is however being made, and all reports agree that want of training, and consequent lack of interest on the part of teachers, are largely responsible.

Research and experiment.

Water-hyacinth (*Eichornia crassipes*).—During the year under review, it has been wisely decided that the Agricultural Department does not possess the necessary staff to undertake, or to control, a big campaign against water-hyacinth. The Irrigation Department has taken the *bhils* and water-courses under its care, and an officer of the Bengal Civil Service has been appointed as special officer. Mr. A. R. Malik held the post of special officer until July 1925; but he was chiefly engaged in testing the value of chemical sprays as means of killing the hyacinth. When positive information had been obtained in this direction, Mr. Malik's work was largely finished, and with it the direct responsibility of the Department of Agriculture.

The problem remains the same, *viz.*—

(*a*) Generally the bulk of the hyacinth on cultivable land is killed by tillage operations. If sufficiently large masses remain till the next season, they become a danger to *bhil* paddy cultivation.

(*b*) Blocking of khals and other narrow water-courses impedes and may prevent navigation.

There is evidence that damage to *bhil* paddy is taking place in South-East Mymensingh; also in Munshiganj, and in Faridpur where the conditions are as described at (*a*) above.

Fibres—*Jute* (*Corchorus capsularis*).—In the varietal tests at Dacca D. 154 was again the standard, R. 85 being left out. This year D. 27 fell back in its yields and D. 128 came up almost level with D. 154. None however quite reached the latter, and on the average D. 154 is well ahead as the heaviest yielding type of *C. Capsularis* yet met with.

In the present season attempts are being made to compare the percentage fibre content of different types of *C. Capsularis* with a view to obtaining still heavier yielders than are available at present.

Jute (*Corchorus olitorius*).—For the present, variety trials of races of *C. Olitorius* with Chinsura green as a standard, have been suspended. The latter appears so outstanding a yielder that nothing has yet been found to approach it in this respect. This conclusion is supported by the phenomenal increase in the demand for its seed.

Quality of fibre.—The joint investigation into the quality of jute fibre, which is being made in collaboration with the Indian Jute Mills Association, continues. As would be expected, the appraisement of last year's samples yielded the net result that, as regards quality, there is little, if any, difference between departmental and other races of jute. The work in hand at present is in the direction of investigating the effect of environment on the fibre, with a view to confirming the long held impression in the trade that the environment, *i.e.*, soil, climate retting water, etc., ultimately determines the quality of fibre, and that the properties intrinsic in the seed have little if any permanent effect. Some results hitherto obtained have tended to combat this view, and it seems possible that the seed may have at least a temporary effect on the quality of fibre. It has now been decided to carry on the trials for some years to see if the effect of environment is not cumulative and if, in the end, it will not mask any hereditary property carried by the seed.

Sida (*Sida rhombifolia*).— Samples of *sida* fibre sent to Dundee have again elicited the opinion that *sida* is suitable for the purposes to which fine jute would be put. *Sida* yields less fibre than jute, and there would be no object in producing it in the jute tract. Its only use might be in the event of its becoming desirable to extend the production of this class of fibre to areas where the incidence of rainfall would not suit jute.

Rhea (*Boehmeria nivea*).—Further investigation into the extraction of rhea will be continued as soon as the new plot, recently laid down, yields sufficient stems for the purpose.

Sisal hemp (*Agave sisalana*).—Propagation of late "polling" strains is proceeding.

Manurial experiments.—It has already been proved—*vide* former reports of the Fibre Expert— that on red soils the application of lime, bone and potash at an average annual cost of Rs. 18 per acre is a profitable practice resulting not only in a material increase in the yield of jute but also of other crops throughout the rotation.

The investigation of artificial nitrogenous manures like nitrate of soda, ammonium sulphate and calcium cyanamide is now in hand, not only on the red soil at Dacca, but at various other farms in the province.

It is of course a certainty that no considerable use of artificial manures can take place without financial assistance to the cultivator, but if this vital difficulty can be got over, through co-operative or other agency, there is good reason to believe that a considerable net profit is possible in some tracts from the use of artificial manures.

The work on manures is being continued because, when the organization of the distribution of departmental improved seeds on a large scale has been arranged, the further increase to be obtained by manuring will become one of the main lines of departmental activity.

Irrigation.—After a delay of several years, owing to lack of funds, a 7″ tube well is to be sunk at the Dacca Farm, for investigation into the value of irrigation. At present the production of *rabi* crops on the farm does not result in a sufficient yield to pay for the cost of cultivation. Sugarcane too, in many years, cannot mature fully on account of lack of water, and the cultivation of fodder crops, either during the cold weather, or in the early hot weather, will be enormously facilitated by irrigation.

Nor is the above confined to the red soil at Dacca. There are, for instance, whole tracts in the 24-Parganas, Hooghly and Howrah where the soil is good but where, owing partly to the poor rainfall distribution in the early months of the year, and partly to the low level of the land, it is at present only possible to grow one paddy crop in the year. Thus the bulk of the land is only occupied from July to November, and for the rest of the year it is largely bare of crops. Yet the sub-soil water is within a few feet of the surface, and with irrigation it could produce either *rabi*, or hot weather fodder, or food, crops.. The same is true of large areas of low land in East Bengal.

Another example of the value of irrigation in unexpected circumstances is the appeal to Government from cultivators in South-Eastern Mymensingh to provide irrigation for *boro* paddy, which crop is said to suffer frequently from lack of moisture in the hot weather. The case is being investigated in collaboration with the Irrigation Department.

The appointment of the Agricultural Engineer has again been delayed, and funds have not been provided in the current budget. It is hoped however that a more favourable result may follow inclusion in the schedules for 1927-28.

Artificial farm yard manure.—Two or three years ago the famous agricultural research station at Rothamstead, England, published a recipe for making an efficient substitute for farm yard manure from waste straw, leaves, and other organic refuse. A proprietary preparation called "Adco", for assisting the rotting process necessary for the preparation of "Artificial Farm Yard Manure" as it is called, is now in the market, and can be bought from Messrs. Shaw Wallace & Co, of Calcutta,

Investigations into the decay of organic matter have occupied the attention of the appropriate research sections at Dacca for over ten years, beginning with the retting of jute and continuing, through work on the deterioration of moist baled jute, and the process of decomposition of green manure. The conclusion had been reached from all this work that urea is the most potent food for the bacteria which decompose carbohydrate material, and cattle urine, with enough bone-meal to bring up the phosphate content of the residue after fermentation approximately to that of ordinary farm yard manure, has been used on a large scale at Dacca for the last two years for bringing organic refuse, *e.g.*, sugarcane pith, leaves from sugarcane, weeds, waste straw, etc., etc., into such a state of decay as will make it immediately useful as plant food. The results have been entirely satisfactory, and the residue approaches ordinary rotted cowdung very closely in composition, being if anything slightly richer in nitrogen. In the year under review, approaching 2,000 maunds (73 tons) of this artificial farm yard manure have been made at Dacca and the manure supply is within measurable reach of being doubled. The significant thing is that this has been brought about by use of materials which, in the past, have been largely if not entirely wasted, not only at Government farms, but almost universally throughout the country. The same materials are available to every cultivator in abundance, but the great difficulty is that he has only a mud floor in his cattle shed, and that most of the urine must be lost by absorption in the soil of the floor Even however if 25 per cent. could be saved, it would be worth while, and attempts are being made to contrive such a simple and inexpensive arrangement as could be taken up by an average cultivator. Failing this, the decomposition of organic refuse by using ammonia salts with bone will be advocated.

Botanical Section.

Rice (*Oryza sativa*).—Experience during the year has continued to show that under the conditions for which they were selected, the three well known departmental races *Indrasail*, *Dudsar* and *Kataktara* are capable of largely increased yields as compared with local paddies and that, so far, none has been able to challenge their superiority.

These types are however not suitable for all the wide range of conditions, which exist in the Presidency, and, as indicated in former reports, special attention is now being given, both to West Bengal, where almost all types of soil conditions are met with, and to Barisal the home of *balam*, the fine quality, late maturing paddy, which seems to thrive particularly in the tract round the coast line of the Bay of Bengal.

Balam paddy.—Pure line selection applied to *balam* paddy has resulted in one strain which, on tests so far made, given an increased yield of 15 per cent. The results are subject to confirmation by work now in progress.

In West Bengal, at Bankura, the locally popular races, *Badkalamkati* and *Bhatmuri*, have been subjected to selection, and tillers of each variety have been collected from every thana in the district.

At Bankura too a full survey of local varieties is in progress, and early races, both pure line types, and types selected from *aus* and *aman* crosses, are under observation.

At Dacca, the most interesting, as well as the most important, work was the continued investigation of hybrids obtained by crossing *aus* and *aman* paddies, from which it is hoped to obtain a complete series of types suitable for all conditions in the Presidency.

Some of the *aus* crosses were subjected to yield tests for the first time, and some of these, while equal in yielding capacity to *Kataktara*, ripened up to a fortnight sooner. If these results are confirmed, the new races will prove of great value on double crop paddy land where, in order to give a satisfactory period of growth to the *aman* rice, the *aus* crop must be off in good time. Its lateness in maturing has been the chief obstacle to *Kataktara* in a double crop paddy rotation.

Transpiration.—It is again confirmed that phosphate manuring does lower the transpiration rate of paddy. It follows that, in a year of short moisture, a full paddy crop can be reaped on land, manured with phosphate, which would otherwise not contain sufficient moisture to mature the crop.

Germination of rice.—In the year under review, the observation, first made on *Kataktara*, that the grain could safely be reaped 20 days after flowering, has been extended to the transplanted *aman* types *Indrasail* and *Dudsar*. It is found that the latter can be harvested 23—27 days after flowering in place of about 55 days. The significance of this work is considerable as it gives the cultivator so much longer time to carry out his reaping operations. Field trials are now in progress to see how far the results can be turned to practical use.

Pulses.—Investigation into these crops continues, but there is nothing important to report regarding them.

Fodder crops.—Work in this direction continues. Japanese millet (*Panicum crusgalli*) shows great promise. It is very similar to *bajra* (*Pennisetum typhoideum*) in appearance, and is a very rapid grower, being ready to cut for fodder in six weeks, and maturing seed in two months. It has done well nearly everywhere, and is just the sort of crop to appeal to a cultivator. Its possibilities will be exploited to the full. It can be sown from January onwards till September provided there is moisture; so it is a true catch crop.

Other millets such as *juar* (*Andropogon sorghum*), though heavier yielders, take five or six months to mature; also they are poisonous in the young state. Moreover when full grown, the lower part of the stem is hard and of comparatively little feeding value.

Reana or wild maize, is likewise promising, but also takes 5-6 months to mature.

On the whole Japanese millet and maize (*Zea mais*) are the most satisfactory grain yielding fodder crops so far. As a permanent source of fodder, Guinea grass is of great value, and if suitably treated, is capable of surprisingly heavy yields of excellent green food throughout the year. Of the pulses, cowpea and sword-bean are the best. A promising pasture grass, known as Natal grass, which did not seem to suffer seriously in the dry weather season is being tried at Dacca. It has been planted in a larger scale in the present season and will be watched with interest.

Other pulse fodder crops which have done well at Bankura in West Bengal are soy-bean, and an early maturing, erect type of groundnut, obtained from Ranchi in Bihar, where it was selected by Mr. Dobbs, now Director of Agriculture in Bihar.

At Bankura too a mixed crop of maize, Japanese millet, or *juar*, with *til*, or *rahar*, seems to have distinct possibilities; selection work is now in progress with *rahar*, special regard being paid to the requirements of West Bengal.

The Second Economic Botanist continued to work on cotton, deep water paddy, pulses and fodder crops.

Cotton.—It is now reasonably certain that it will be possible to introduce cotton as a revenue crop into the high lands of West Bengal. The requirements are, firstly, early maturing, because the soil moisture does not usually last beyond the beginning of December; secondly a good ginning percentage. Local cottons have been found which are early maturers; but their ginning percentage is as low as 25 per cent. On the other hand some American types, which mature almost, if not quite as early as the local cotton, have a ginning percentage as high as 33. Moreover they grow well in West Bengal conditions, and last year, at Bankura, yields of *kapas* up to 7½ maunds per acre were realized. This is very satisfactory, and the strains are now being multiplied as rapidly as possible for distribution.

Cotton cultivation will be a blessing to West Bengal which at present is without a revenue crop.

Cotton grows well in East Bengal as a *kharif* crop, but it has to compete with jute, sugarcane and food crops. Moreover it breaks into three seasons and, financially, has therefore to be reckoned on this basis. Apparently cotton was grown in East Bengal many years ago; but it has been deliberately thrown over in favour of jute, because the latter not only pays better, but can bring its return of money inside four months. For a return on cotton, a raiyat in East Bengal has to wait six months.

It is therefore hardly likely that cotton will regain a footing in East Bengal as a *kharif* crop; but it may be a possibility as a *rabi* crop on *char* lands. It has been reported that Dacca muslin cotton was so produced. Trials with this object in view have not been encouraging, because the crop has been attacked by cut-worms and broken by hail.

The method of manufacture of Dacca muslin seems to have been lost. It is not apparently known if the cotton received any previous preparation, or what instruments were used in its manufacture. A type of cotton has been found both in East Bengal and in North Bengal, which answers very closely to Roxburgh's description of the Dacca muslin cotton plant. If this is the muslin cotton, it is possessed of no particularly fine qualities. In order to try and find out something about the manufacture of Dacca muslin, the Nawab Bahadur of Dacca has kindly offered to give a small piece of the genuine material for microscopic examination.

"Comillas" cotton.—Now that the Rangamati (Chittagong Hill Tracts) Farm is in being, it will be possible to commence serious work on this class of cotton. This has been impossible so far, because the plant refused to behave in a normal way in the plains.

The future of "Comillas" is rather a problem. The lint is only used for admixture with wool, and commercial members of the Cotton Committee think that, though the demand is healthy enough now, it may become precarious later. On the other hand it has been found that American cottons do quite well in Hill Tippera, and it was proposed to replace "Comillas" with American cotton as quickly as possible in this State. The Cotton Committee however wisely deprecated too precipitate action, in case the American types should, by degeneration, eventually prove unsuitable for Hill Tippera conditions.

Deep water paddy.—Progress is being made in this difficult investigation which it is hoped will now begin to yield results.

Oilseeds; mustard.—The selected types of *tori* have been multiplied, but the free manner in which this crop crosses is against distribution of its seed, except in such large quantities as to entirely replace local types in any given area.

Chlorosis in jute.—Work on this subject has not advanced very much towards a conclusion, excepting that a wholly chlorotic type now appears to have been isolated. The facts remain, *viz.*, that a long tap root with a deficient surface root system, and semi-bleached, crinkled leaves, are characteristic of chlorotic plants; also that non-chlorotic parents breed true, and that crossing a chlorotic plant with a non-chlorotic one, yields a chlorotic progeny.

Mycology—Betel-vine disease.—This disease has done considerable damage to betel-vine crops in the southern portion of the Presidency, particularly near Calcutta, and round the head of the Bay of Bengal, in the districts of Khulna, Bakarganj, Noakhali and Chittagong. Much work has been done, both at Pusa, at Nagpur and at Dacca, with a view to recognizing the organism responsible for the disease; and both bacteria and fungi have been isolated, which, it was considered, might be the active agent. It is only at the time of writing however that news has come that a fungus (*Phytophthera sp.*) has been definitely identified as the origin of the disease. Curiously enough the discovery has been made practically simultaneously both in Nagpur and in the Malay Peninsula where the disease also occurs. Moreover experiments at Dacca were leading in the same direction. If the cause of the disease is a *Phytophtera*, the treatment with a copper spray should be comparatively simple. A bacterial disease, in all probability, would have been a much more serious problem.

Mulberry disease.—Rust and mildew appeared on mulberry in the Kurseong Sericultural Nursery a year ago, and reports of a recurrence are to hand at the time of writing.

Cultures of *Thielaviopsis* inoculated into healthy Arica palm failed to produce "Bud-Rot" disease.

Rhizoctonia destruens was detected on sword bean, and the affected plants were destroyed as a precaution.

Disease of seedling cabbages.—A seed bed disease of cauliflowers and cabbage was found to be bacterial, and was checked by spraying with 0·25 per cent. solution of Formaldehyde.

Preservation of potatoes in the plains.—In collaboration with the Entomological Assistant, attempts are being made at Dinajpur and at Tarakeswar to prevent rotting of potatoes kept for seed. Washing with antiseptics, such as 1 per cent. corrosive sublimate or 2 per cent. Formalin, and subsequent fumigation with petrol vapour, is the treatment.

Entomology.—The Entomologist spent 61 days on tour and, as usual, supplied interesting information. He observed and dealt with a long list of insect pests on various crops.

Mango weevil.—This pest appears to have disappeared from the mango orchard at the Dacca Farm. A few years ago it was virulent on some of the trees whose fruits ripen at the earliest date in May and June. The present freedom is attributed largely to keeping the land of the orchard cultivated during the dry weather.

White ant.—Dr. Britton, associated with Fumigators Limited of London, came to Dacca and demonstrated the very effective action of finely powdered calcium cyanide, blown by an air pump into white ant (termite) nests. In the great majority of cases queen ants were found dead after treatment, even in the case of old established nests, under cement floors, and penetrating to a depth of 6 feet or more. Agents in Calcutta for the chemical and for the pumps are Messrs. Shaw Wallace & Co.

Examination of sugarcane setts.—The Mycological and Entomological Assistants continue to examine all setts sent out to purchasers and to certify the setts free of disease.

Insect pests on rice and jute.—Insect pests, such as the Bihar hairy caterpillar and the jute semilooper do considerable damage to jute in nearly every season. This could be largely prevented by very simple means. For instance the moth of the hairy caterpillar always lays its eggs on the under-surface of jute plant leaves, and the egg clusters can be detected by their yellow colour at a distance of several yards by going into a jute crop and bending, so as to be able to see the under-surface of the leaves. By taking off the leaf with the egg cluster, and burning it, or immersing it in a little kerosine, the hatching of some hundreds of hairying caterpillars is prevented with each leaf so taken.

The jute semilooper, which attacks the young bud of the jute plant, can be largely check-mated by dragging a rope soaked in kerosine or phenyle over the crop. The tops of the plants are practically the only parts touched, and the little of the kerosine or phenyle which adheres to them is often sufficient to prevent further damage.

Similarly the attack of the rice stem borer can often be warded off by noticing, and burning, the first plants attacked.

The Entomological Assistant has published short notes on simple methods of dealing with common pests—*vide* Departmental Bulletin No. 4 of 1925. This bulletin should be in the hands of every responsible person in the country so that when a pest appears, he will know that it can be dealt with in a simple way, and will act accordingly.

Damage to *Patnai* paddy at Diamond Harbour in the year under review was shown to be due to short rainfall and percolation of salt water through the embankments protecting the fields from adjacent channels carrying tidal water.

Chemical Section.

The most important field work for Mr. Carbery is in connection with sugarcane. *Tanna* still retains its public popularity, largely because

of its hardiness. It is a good drought resister, will stand water-logging, resists jackal and even pig, is practically free from disease and moreover is a very good yielder. This is a long list of qualities to its credit. On the other hand *Tanna gur* is not of the finest quality, and every effort is being made to supply a cane which will remedy this defect. In the meantime 12 new demonstrations with *Tanna* cane were organized by the Agricultural Chemist and his staff in the year under report.

Of newer canes, C. O. 213, a hybrid seedling cane produced at the Government Sugarcane Breeding Station at Coimbatore, Madras, has so far shown greatest promise. It is a very heavy yielder of *gur* of excellent quality; and it resists drought and water-logging. It is however softer than *Tanna*: is thus more vulnerable to attack by jackal and pig. It is also more liable to lodge than *Tanna*. At the same time it has withstood five years of Bengal conditions without succumbing to disease, and this, with other qualities already referred to, justifies its being given out in quantity to the cultivator for trial. Distribution has been commenced in the present year, and will be continued on an increasing scale, unless unfavourable reports are received. It is perhaps worth noting that C. O. 213 has done exceedingly well over a wide range of conditions in North India from Bengal to the Punjab.

Date-palm sugar.—Interesting results were obtained in the year under review, which demonstrated, on a working scale, the value of liming the collecting pots, and the efficiency of the McGlashan furnace, in producing an increased quantity of *gur* of improved quality. The demonstrations will be continued in the coming season.

The efficiency of the McGlashan furnace was also demonstrated in sugarcane tracts in Dinajpur and Rangpur, in both of which districts *raiyats* showed marked interest.

Tobacco.—Experiments are still in progress to ascertain the most suitable areas for each kind of tobacco. In the last year the results were not as good as they might have been, owing to inexperience of some of the respective Farm Superintendents. The next season should show an improvement in this respect.

There seems little doubt that the departmental selections of *Matihari* and *Bhengi* are popular with cultivators, and that they are spreading at a considerable rate, even into tracts which have not hitherto grown tobacco on a large scale.

Seed of new exotic tobaccos has been imported for investigation.

The headquarters of the cigar maker have been transferred to Dacca where he is under the eye of the Agricultural Chemist. The cigars find a ready sale, last year's output being valued at Rs. 752-5. It is a pleasure to note that the care which Mr. Carbery has given to this work is resulting in a steady improvement not only in the quality of cigars made, but also, incidentally in the demand from the public for the cigars.

Soil experiments.—Most valuable progress is being made in soil investigations. On red soils the value of lime has already been established; but further results are now becoming available regarding the optimum amount which should be applied at one time. If too much lime is applied, potash is thrown out of solution; also, at a later stage, phosphate.

Proof that potash is potent in determining the quality of sugarcane juice, and that it affects its crystallizing properties, follows from the above observations.—An excessive dose of lime produced a juice of surprising purity.

Cake manures.—The method of decomposition of cake in soil is being followed, and the best conditions for the formation of nitrate are being elucidated.

The manurial requirements of transplanted paddy are under observation, and significant results are being obtained.

Varietal green manure tests; the manurial requirements of mulberry; a study of West Bengal soils, and observations on the betel-vine disease are further items which illustrate the energetic industry of Mr. Carbery and his staff.

General departmental work in West Bengal.—The farms at Suri and Bankura are still to be regarded as experimental, until we have fully grasped the possibilities of the tract they represent. Since these farms have been opened, most valuable information has been obtained, which points towards prospects of West Bengal again becoming a prosperous agricultural tract. Apart from improved varieties of paddy, which will be soon available for every class of land, there are other crops which can be grown with profit on high lands hitherto practically neglected. Cotton, maize, *rahar*, soy-bean, fodder crops, such as Japanese millet, sugarcane, tobacco, etc., make a long list of crops with possibilities for West Bengal.

Regarding the high lands, it is obvious that they must be terraced like the paddy lands, only with facilities for drainage, instead of *ails* for holding up water. Terracing is the obvious cure for the erosion and ravining which has already spoiled thousands of acres of good land in West Bengal. This ravining spells almost permanent ruin for the area affected, as far as agriculture is concerned; and the rapidity of its progress in some tracts is sufficient justification for a national movement to prevent it. After all it is chiefly a simple engineering problem.

Deterioration of forests.—While it may be advisable to terrace all the rolling uplands of West Bengal, it is almost certainly not advisable to bring the whole of this area under annual cultivation. From a climatic point of view, *i.e.*, the incidence of rainfall, especially in the early part of the year, it is necessary that the *sal* forests, which at one time clothed large areas of the tract, shall not be exterminated. The process of forest denudation has probably gone too far already. At the suggestion of this Department, the Conservator of Forests in Bengal is investigating the problem and has already made some proposals.

As pointed out in last year's report, the whole question of terracing, reafforestation, etc., is bound up, not only with preserving large areas of land in West Bengal from destruction, and with conservation of the moisture supply in West Bengal generally; it is also indirectly connected with the almost yearly floods which take place in the lower reaches of the Damodar River. For if West Bengal can, for its own benefit, prevent the bulk of a heavy rainfall rushing into the river channels within a few hours, we shall not be faced with the frequent disastrous floods which take place so regularly in the Tamluk and Contai subdivisions of the Midnapore district.

Agricultural Stations and Farms.

During the last year the Berhampore Farm has been practically completed. It is very typical of Eastern Murshidabad and of much of the silt area in the Presidency Division. It is already an important centre for work on sugarcane, tobacco, pulses, oil-seeds and fodder crops, and is likely to develop still further in the future.

The Dinajpur Farm is approaching completion, and work has begun. There is however still some reclamation to be done, and slight alterations in the drainage system may have to be introduced.

The Mainaguri Farm has been handed over by the Public Works Department and work has commenced in the present season.

Commencement has been made with the erection of buildings at Malda and at Rangamati, and these should be finished in the current year.

At Nadia the negotiations in regard to the Company Bagan have ended in the Collector, resuming charge of the land on behalf of Government. The scheme for this large area of about 450 acres, which contemplates not only a district farm, but a dairy farm and a fruit station, will only develop gradually as funds become available and as experience in the respective directions accrues. It is hoped that, when it materializes, the scheme will be a source of profit to Government, and incidentally, a valuable addition to the milk supply of Calcutta. In the meantime it is proposed to run the *Bagan* on the Kishoreganj principle with departmentally improved crops suitable for the tract.

It is hoped that sanction for a district farm for the 24-Parganas, at Baraset, will issue in the current year.

The district farms at Suri (Birbhum) and Bankura are now definitely in a position to make progress. It has been realized from the first that if made proper use of, these farms would prove of great value to the rolling upland tract in which they are situated. Up to the present, practically the only crop in West Bengal has been paddy, which has been grown so far up the slopes that, in any year, it must be a precarious crop, and, in most years, it must be more or less of a failure. It is now being shown, at both Suri and Bankura, that by intelligent terracing and drainage of the land, the upper portions of the slopes can be brought at least under monsoon cultivation of high land crops, like cotton, millet, *rahar*, maize, soy-bean and so on. A further effect of the terracing of the upper portion of the slopes is of course that rain water, which used to run off the uncultivated, unterraced slopes immediately, is now held up for gradual percolation to lower lands. The rice crop on the latter is thus made more safe.

Two of the most senior and most experienced Agricultural Officers have been placed in charge of the Suri and Bankura farms. This was necessary in view of the importance of these farms and of their great possibilities in improving economic conditions in what has, to some extent, been regarded as a "dying" tract. I am glad to note that both Babu Rajnath Roy at Bankura and Babu Chuni Lal Mustafi at Suri have so far realised expectations, and that they are likely to do still better in the future.

During the year the Khulna District Agricultural Association under the presidency of Mr. Bradley-Birt, I.C.S., decided to increase the size of their demonstration area from one bigha to 24 bighas. The Department of Agriculture is helping in the management of the area, which will tend not only to popularize departmental crops in the district, but to give members of the Association, who are taking an active interest in it, a desirable insight into the details of practical agriculture.

Cattle breeding.—Operations at Rangpur Cattle Farm have been conducted more or less on the assumption that a cattle expert would be appointed in the current year. The money is in the budget; and the applications have been received; but up to the time of writing, no appointment has been made. It is of vital importance that no one but a thoroughly practical man, "with an eye for cattle", should be selected. No academic training, either on the side of pure science or in veterinary science, will compensate for a lack of knowledge of cattle.

As foreshadowed in last year's report, the Ayrshire bull arrived in Dacca about November 1925. He is a fine looking animal with a distinguished pedigree, which includes champion animals. Both his dam and his sires' dam gave 18,000 lbs. of milk per lactation, which is equivalent to about 30 seers a day.

Immediately on arrival, the bull was given simultaneous inoculation against *rinderpest*. As is usual, he contracted *Pyroplasmosis*, from which cause he was seriously ill until the monsoon set in. He is now better and, provided foot and mouth disease, or *hæmorrhagic septicæmia* do not intervene, he should be a very valuable asset in the task of improving the milk supply of Dacca and Calcutta. He has served about 20 cows up to date.

It is gratifying to note that the public seems to be taking increased interest in the departmental bulls placed at the different district farms. The demand for service is still not very large, but it shows distinct signs of improvement. It is always the first step in matters of this kind which is most difficult, and once inertia is overcome, progress may be satisfactory enough.

During the year under report the double inoculation, against rinderpest, of all animals at Rangpur and Dacca was completed.

The Tharparkar bull, and the cows which accompanied him from Sind, have been brought to Dacca. In many ways the Tharparkar type seems suitable for Bengal and the animals are doing very well at Dacca. It is unfortunate however that the Tharparkar breed is not sufficiently fixed to be regarded on a definite type. The decision in regard to the future will be come to on the appointment of the cattle expert. If it is decided not to persist with the Tharparkar breed, the cows will be crossed by the Ayrshire bull, in which case the progeny should be very good milkers indeed.

Fodder crops.—These have already been dealt with in the section on botanical work.

Irrigation.—See page 7.

Propaganda.

The propaganda work of the Department in the districts proceeds apace and tangible results are becoming visible in every direction. As noted in last year's report, the expansion of propaganda, and appreciation by the public of departmental recommendations, has necessitated drawing on the reserve of District Agricultural Officers under training at Dacca. The five extra District Agricultural Officers with an equivalent number of demonstrators, whose appointment was mentioned in last year's report as having been asked for, have not yet materialized, in spite of the fact that four of them were to replace officers taken from training. The trained reserve is thus only two instead of six. In the meantime the need for more staff has intensified, and Government is now asked for eight District Agricultural Officers (Upper Subordinate Service) and 40 demonstrators (Lower Subordinate Service). Definite cases have been made out for the retention of each of these officers, and it is a most urgent matter that provision should be made for them in the budget schedules for next year. Otherwise we shall be in the position we were before retrenchment, *viz.*, having work to do but not enough qualified men to do it. Raw graduates, as they came from Sabour, were of little use, having only a smattering of theoretical knowledge, and little or no practical experience. The best of them requires fully two years on the Dacca Farm before he can be trusted to behave intelligently in the districts. It is this which makes the present situation more serious than it appears on the surface. Those who do not know, are apt to comfort themselves with the reflection that a number of Sabour certificate holders are awaiting employment, and fit to begin useful work at once. This is a mistake. The young men are only half trained and, as they are, are practically useless to us. Indeed, sent out to the districts without further training, they must, through no fault of their own, and merely on account of lack of knowledge, bring discredit on the Department and on Government.

A portion of each farm continues to be run on an economic basis. The results for the year show increased profits on account of the high prices obtained for jute in the season 1925-26.

In the Kishoreganj class of farm, an addition has now been made of the Jamalpur Khas Mahal area, while, in the near future, the Company Bagan at Krishnagar will also be worked for a time on the Kishoreganj principle. The same applies to a Khas Mahal area at Barisal, and one at Noakhali. These farms are run in collaboration with cultivators, on condition that the latter grow improved departmental crops and receive wages in kind. The value of the share of crops pays for the salaries of the District Agricultural Officers in charge and two demonstrators. Thus, at little or no cost to Government, there is provided demonstration of departmental improved crops on a considerable area, and, as stated in former reports on Kishoreganj, a largely extended use of these crops in the neighbourhood has resulted. Jamalpur has only come into proper working order in the year under report, but is already influencing the agriculture in the neighbourhood in the same way on Kishoreganj. It is hoped to make a small beginning on similar lines in the *rabi* season at Krishnagar and to extend gradually later.

The Barisal area is intended for the multiplication and distribution, on the Kishoreganj principle, of the improved races of *balam* paddy which are now being evolved.

The Court of Wards farm at Brahmanbaria (Sarail Estate) continues to do excellent work, and Mr. Halliday is to be congratulated on the practical interest he takes in the farm. Besides growing departmental crops as field demonstrations, there is a departmental stud bull available to serve cows belonging to tenants of the estate; also some good poultry. The receipts of this farm cover all labour and other expenses excepting the pay of the demonstrator and leave a credit balance of Rs. 102. The demonstrator in charge deserves commendation for his work during the year.

The Baratia (Santosh Estate) Farm is another successful demonstration area of about 25 bighas. This farm is run on similar lines to the Brahmanbaria Farm above, and it was under the Court of Wards until the estate was released. The farm grows departmentally improved crops; also supports a departmental stud bull, and, in the year under review, it was a source of profit to the estate to the extent of Rs. 800. Of course the high price of jute was responsible for a portion of this considerable profit. Nevertheless both the Baratia and the Sarail farms show that, in suitable conditions, estates can run a well conducted demonstration farm, which will not only benefit the estate tenants by seed, etc., but which will at the same time actually be a source of revenue to the estate.

The Joydebpur (Bhawal Estate) Farm is an instance of a farm under more difficult conditions, being on a particularly uneven portion of the red soil tract. Even here however very useful demonstrations were conducted at a net cost to the estate of Rs. 420 in the last year.

The Kalimpong Homes Estate is another example of a farm, the work of which is efficiently done.

The number of private farms continues to increase, and there is now a list of about 60 such farms in the Rajshahi Division alone. Of these may be mentioned the Dayarampur Farm belonging to Kumar Sarat Kumar Roy of Dighapatia; another farm at Bhaturia, being the property of Khan Bahadur Ershad Ali Khan Chaudhury.

In the Presidency Division, the Maharaja of Nashipur has a demonstration farm at Nashipur, while the Banjatia Farm belongs to the Maharaja of Kassimbazar. These and other private farms are in the Murshidabad district. In the Nadia district are also several private farms. Rai Kumud Nath Mullick Bahadur has a large farm near Ranaghat. Others are at Ballavpur, the property of Babu S. K. Ghosal, and at Nakashipara, belonging to Mr. S. N. Sinha Roy. There is also a farm of 21 bighas attached to the Chapra Middle English School near Krishnagar.

In the Jessore district there are eight private farms, of which Nakful Farm, of 7 acres, belonging to Babu Bejoy Mohan Banerji, grows most departmental crops. The other seven farms are all popularizing departmental crops. Babu Mani Mohan Bhattacherji of Gargachi Farm, besides growing departmental crops on 25 bighas, has established a poultry area with 150 ducks.

In the Burdwan Division, Rai A. C. Banerji Bahadur still maintains his farm at Sultanpur, Birbhum, and has recently established agricultural classes, on the Punjab system, in the local middle English school. Babu Narendra Nath Mukherji has a demonstration area of 13 bighas, at Bakulia, Hooghly district, on which he grew departmental *Kataktara* paddy and "Chinsura Green" jute at a profit. At

the Panisheola Farm, Babu Basanta Kumar Mitra grew departmental varieties of paddy and sugarcane, and Rai Bejoy Narain Kundu Bahadur did the same on 100 bighas at Itachona.

Altogether there are 40 private farms in the Presidency and Burdwan Divisions, which, with 60 similar areas in the Rajshahi Division, make 100 centres growing departmental crops, by preference, for profit, each one of which is a demonstration independent of Government farms. No wonder the area of departmental crops is increasing rapidly.

Seed distribution.—The production and distribution of improved seeds must always be one of the most important functions of the Department of Agriculture.

Jute seed.—About 3,000 maunds (110 tons) of departmental jute seed were available for sale in January 1926 and owing to the high prices realised for fibre, there was a tremendous demand. Three times the amount of departmental seed could have been sold had it been available. The outstanding feature of the jute seed season was the great popularity of "Chinsura Green", the departmental selection of *C. olitorius*. So great was the demand for this seed in the Chuadanga (Nadia) subdivision that an association of about 4,000 cultivators was formed, partly to ensure supplies of departmental jute seed, but partly also with the object of general improvements in the agricultural practice of the members, in accordance with advice of the Agricultural Department—*Vide* pages 21—22.

The soundness of the work of the Bengal Agricultural Department is now generally recognized by the jute trade. The London Jute Association has generously granted £1,500 (Rs. 20,000) per annum for five years, and it has been decided to utilize this sum in distributing departmental jute seed in small packets on Mr. Milligan's system, in tracts where departmental jute is not yet grown on a large scale.

Under orders of Government, the Department of Agriculture had to avoid losing money in transactions connected with the production and sale of departmental jute seed. Conservative estimates were thus inevitable, and the supply of departmental seed was nearly always markedly less than the demand, with corresponding disappointment on the part of cultivators. In December 1925, the Indian Jute Mills Association, realizing the difficulties under which the Department of Agriculture works in this respect, offered to guarantee the Department of Agriculture against loss in the production and sale of jute seed up to a maximum of Rs. 2½ lakhs. This generous offer could not be directly accepted by Government as the financial responsibility for production and sale of departmental jute seed had just been delegated to Mr. A. L. Godden of Narayanganj, as Government Agent for the sale of jute seed. When this was brought to their notice, the Indian Jute Mills Committee at once agreed to extend the guarantee to Mr. Godden. From the above it is not to be inferred that Government is washing its hands of the production of departmental jute seed. Far from it; for if such a thing were to happen, the whole of the results of the work of the Fibre Expert's section and all the public money which has been spent on the work would be lost in a year or two at the most. What has happened is that the sale of the seed has now become too big an undertaking for the Agricultural Department with its small staff, and it has

therefore been necessary to appoint a business agent for the actual sale of the seed. On the other hand, Government, through the Department of Agriculture, still controls the amount of seed which is to be produced; it scrutinizes the list of growers and the respective amounts of seed which they undertake to produce. It takes the seed on delivery; tests every bag of it, and finally hands it over to the agent for sale at a price also fixed by Government. Thus Government still controls everything essential in regard to departmental jute seed, and these words have been written in order re-assure anyone who thinks that the new arrangement involves any likelihood of deterioration in the high standard of quality which departmental jute seed has always set.

It is necessary to add that Mr. Godden is a man of intergrity as well as ability. Moreover he has, in his connection, with river steamer routes all over Bengal, unrivalled facilities for distributing the seed quickly and cheaply.

Paddy seeds.—In last year's report, mention was made of the difficulties in connection with extending the area under departmentally improved types of paddy, and a short description of the scheme for local paddy seed farms was given. Last year the work was confined to the Dacca district, but in the present year there are one or two such farms in every district in Bengal, where the conditions are suitable for departmental seed. The work requires a lot of supervision, not only at sowing time but at reaping time, and, later, in arranging for the exchange of the locally produced seed with neighbouring cultivators. If successful, the farms will be a very efficient method of disseminating the paddy, so they are worth the trouble involved.

Dudsar (transplanted *aman*) continues to make rapid progress in the Bahrind tract of the Malda district, and *Kataktara* is now well established in parts of Nadia, particularly near the farm of Rai K. N. Mullick Bahadur at Ranaghat; also at Berhampore and in the Dacca district. *Jhingasail*, a departmental transplanted *aman* selection, is popular in Bankura and appears to be spreading rapidly.

Sugarcane.—The popularity of *tanna* cane continues to increase, and in order to meet the demand for setts, considerably increased areas are being cultivated on the Dacca, Berhampore and Rajshahi farms. Last year large numbers of setts were supplied from the Kishoreganj subdivision, while *tanna* areas already established in Chittagong supplied local demands. Altogether the annual number of cuttings supplied must now run into several lakhs.

The new cane C. O. 213 has now been tested in Dacca for five years and has withstood the conditions well, having shown itself a better yielder than *tanna*. It also gives a purer juice. It is a good drought resister and withstands water-logging, and its only drawbacks are that it is rather softer than *tanna*, and that, in some circumstances, it is rather liable to lodge. On the above good points C. O. 213 is considered good enough to give out to cultivators on a small scale, and this is being done in the current year. It is likely that it will soon outstrip *tanna* in popularity.

Tobacco.—Departmental tobacco continues to spread, and as this crop is now under cultivation at most Government farms, it is likely that a further extension will take place in the near future.

The Madrasi cigar roller has been employed for a year, and by more careful work in filling and wrapping has helped to improve the quality of the cigars turned out. This progress in technique has coincided with improvement in the quality of the leaf, for which credit is due to the supervision of the Agricultural Chemist to the Government of Bengal. The cigars are now selling as fast as they can be made. It is regrettable to notice that so far none of the Bengali pupils of the Madrasi roller has yet reached the stage of proficiency.

Agricultural Associations.—The success or failure of an Agricultural Association depends almost entirely on whether or not at least one member possesses sufficient initiative and driving force to pursue the objects of the Association. Without such a personality it quickly becomes moribund and incapable of performing any of its legitimate functions. The above is generally true as regards district associations. Some Collectors also hold the opinion that results of real value cannot be expected from district associations, which are only capable of approving a general policy for a district, and controlling finance, and that the real work must be done by subsidiary associations in the district which have been formed with definite limited objects in view, and often with co-operative aid. Mr. Peddie, I.C.S., Collector of Malda, who has taken considerable personal interest in agricultural associations in his district is satisfied that the above is true. For instance, a subsidiary association may be formed in one village or small tract to facilitate improved practice in silk rearing, while in another case a minor association may have the introduction of departmental jute or sugarcane, or a drainage or irrigation, project as its main object. The District Association is able to advise and encourage such small associations. On the other hand, in some districts, a sort of tradition seems to have grown up that the District Agricultural Association itself should be a more or less active body. This is the case in Birbhum where Mr. G. S. Dutt, I.C.S., and Rai A. C. Banerji Bahadur have both supplied examples of energy and public spirit; Burdwan and Murshidabad; also, rather more intermittently perhaps, in Hooghly and Nadia.

Recently the view has been put forward that instead of attempting to form new and entirely independent organisations like agricultural associations advantage should be taken of existing organisations such as Union Boards. At the last meeting of the Presidents of Union Boards in Tippera, resolutions were passed to the effect that Union Boards are better capable of disposing of seed of departmentally improved crops than officers of the Department, partly because of the influence of the Union Board in its own jurisdiction, and partly on account of the small number of Agricultural Officers. This seems a perfectly sound point of view and the possibilities of Union Boards in assisting the adoption of departmental recommendations will be investigated forthwith.

Little if any progress has been made with the co-operative agricultural associations in the Pabna district, and there seems small tendency for such associations to multiply, except in West Bengal, where the value of collaboration with one's neighbours, in securing a supply of irrigation water, is so obvious as to appeal to every grade of intelligence. Another instance in the Nadia district is the Chuadanga Agricultural Association, which was formed with a membership of about

4,000 cultivators, mainly with the object of securing an adequate supply of the seed of "Chinsura Green" departmental jute. The Association has now gone further, and wishes to establish a 100 bigha farm to be run by the Association, for the purpose of demonstrating other departmental improvements to its members. A site has already been selected and approved by the Director of Agriculture, and Government has been asked to acquire the land. Babu Srimanta Kumar Das Gupta, Subdivisional Officer, Chuadanga, is to be congratulated on the energy he has shown in regard to the affairs of this Association.

The usual departmental contribution of Rs. 1,000 was made to the funds of the Presidency Divisional Agricultural Association and the same applies to the Burdwan Divisional Agricultural Association. The money was equally distributed between districts of the Divisions. The Presidency Divisional Association under Mr. J. N. Gupta, I.C.S., Commissioner, was an active body, and practically every district did appreciable work in disseminating improved seed and popularizing departmental recommendations generally. Of subdivisional associations, Jangipur indented for over Rs. 1,000 worth of departmental seeds. Babu Kalidas Bagchi, the Subdivisional Officer, is largely instrumental for this good work.

Rupees 1,000 was also contributed to the funds of the Burdwan Divisional Agricultural Association, and the money was distributed amongst the district agricultural associations of the Division. Mr. A. W. Cook, C.I.E., I.C.S., was President of the Divisional Association, and good work has been done in Burdwan, Hooghly and Birbhum. Little or nothing was done in Bankura, and Midnapore lacked the services of an Agricultural Officer. Three years ago it was decided that the departmental contribution to divisional associations should be devoted to the popularization of departmentally improved seeds, and their extended cultivation. There seems no doubt that definite progress is now being made.

In last year's report the commanding position of Collectors in regard to agricultural propaganda was mentioned. It is a pleasure to acknowledge the increasing personal interest which Collectors are taking in this direction. Mr. Donovan in Hooghly, Mr. Graham in Nadia, Mr. Peddie in Malda, Mr. Burrows in Faridpur, with Mr. Haldar, and later Mr. Gupta in Rangpur, are all giving special attention to the agricultural needs of their respective districts, and using their influence both on their subordinates, and on non-officials, to encourage progress.

Collaboration with the Co-operative Department.—The desire expressed in paragraph 7 of the Government Resolution in last year's report regarding collaboration between the Agriculture and Co-operative Departments is one which is shared to the full by the two departments concerned, and no opportunity of collaboration is missed. The sale of jute seed to co-operative organizations is one instance, and as the paddy seed farm system developes, co-operative aid will be necessary to finance the purchase and storing of pure seed. As already pointed out, the popularization of manures will be the next great line of work of the Agricultural Department and co-operative aid in this will be absolutely essential.

Agricultural Exhibitions.—The Department of Agriculture took part in the Social Service Exhibition at Dacca in March 1926 and put up comprehensive agricultural, horticultural, and sericultural exhibits which won considerable appreciation.

The Manikganj (Dacca district) Exhibition was again a success. This annual show is growing in importance and enthusiasm, and Mr. S. M. Banerjee, I.C.S., Subdivisional Officer, and Babu Purna Chandra Chaudhuri, Secretary of the Agricultural Association, are to be congratulated.

Two exhibitions at Noapara and Quapara (Chittagong) were well attended.

In the Western Circle, the Suri *Mela* was a successful show, where comprehensive departmental exhibits, including seeds and crops for various types of land; also power and other irrigation appliances, were on view.

The exhibition at the Government Farm, Berhampore, was attended by large number of cultivators who showed much interest in the various exhibits and demonstrations.

Other exhibitions were held at Baraset, Krishnagar, Hooghly, Burdwan, etc.

In the Northern Circle a successful exhibition was held at Cooch-Behar, where, departmental exhibits, besides seeds, produce, and implements, included two stud bulls from the Rangpur Cattle Farm, which were the centre of much interest. The same applies to the demonstration of cream separation and butter making.

Other successful exhibitions were held at Bogra and Rajshahi.

Now that the Department of Agriculture has recommendations to make, properly organized agricultural exhibitions are of considerable use in bringing cultivators and others interested in agricultural improvement into contact with the Department. Apart from departmental exhibits and demonstrations, which are of course a necessary factor in these exhibitions, encouragement to genuine cultivators to bring their own produce and stock into competition with that of their neighbours, is now an equally essential feature. It needs little imagination to realize that if a cultivator has a stake in the exhibition, whether it be a good cow, or only a seer of paddy, his interest will be intensified greatly. The same applies in a modified degree to those who do not actually exhibit, for they are interested in speculating as to who will win the prize. It is a good sign to see cultivators going round, and exchanging impressions on the competitive exhibits, with almost as much earnestness as the judges themselves.

SECTION II—SERICULTURE.

Staff.—Mr. P. C. Chaudhuri, Deputy Director of Sericulture, Bengal, remained in charge of sericultural operations in the Presidency throughout the year. He was assisted by three Superintendents, *viz.*, Babu Surendra Nath Bose, Maulvi Shaikh Abdulla and Miss M. L. Cleghorn, in their respective jurisdictions.

Bengal Silk Committee.—The Bengal Silk Committee held one meeting during the year. As the period of three years, for which the non-official members hold office, will expire on the 7th September 1926, the question of appointment of new members is under consideration of Government.

Sericultural nurseries.—There was no change in the number of sericultural nurseries during the year. The total area of mulberry at the nurseries is about 150 acres. The existing nurseries, eleven in number, worked on the same lines as in the previous year, except that the Berhampore Central Nursery, in addition to the supply of seed to the professional rearers, undertook the rearing of Nistari stock for supply to other nurseries and to selected rearers. The main work of the nurseries is the issue of disease-free seed of *Nistari* and *Chotopolu* throughout the year. Both *Nistari* and *Chotopolu* stocks continued to be satisfactory, the percentage of pebrine being normal, and in some cases as low as 2 per cent. The percentage of pebrine in the outside Nistari stock secured from the villages was found to be 43 per cent. in the first generation. This was reduced to 2 per cent. in the third generation, *i.e.*, after selection for two generations in Government nurseries. The maximum disease percentage allowed in the seed sold to rearers is about 5 per cent. The nurseries are doing good work, and the demand for their seed continues, though at lower prices, on account of the slump in the price of silk. With a view to increasing the output of leaves, a portion of the inferior lands in each nursery, except Berhampore, Bogra and Kurseong, have been reclaimed and replanted with mulberry, after proper manuring.

The Viswa Bharati University has offered about 50 bighas of land at Bolpur for starting a nursery at Surul. The proposal to open a nursery at Sainthia has therefore been kept in obeyance, until a decision in regard to Surul has been arrived at. Forty bighas of land has also been acquired near Vishnupur town, Bankura district, for the establishment of a nursery there.

Production and receipts.—The nurseries produced 21,262 *kahans* of seed cocoons, as against 17,380 *kahans* in the previous year; and the total receipts from the nurseries amounted to Rs. 71,242-8 against Rs. 75,275, while the expenditure was Rs. 2,14,787-14-11 against Rs. 1,89,881 in the previous year. The above receipts do not include Rs. 5,861-14 being the value of inter-departmental supplies. The decrease in receipts is due to fall in the price of cocoons consequent on the slump in the silk market.

Manurial experiments.—The manurial experiments in charge of the Agricultural Chemist continue. No results of importance are yet available for record.

"Artificial Farm Yard Manure" on the system advocated by the Department of Agriculture was manufactured in some of the nurseries.

Disinfection.—The actual expenditure under this head was Rs. 7,198 during the year. Seven hundred and sixty-three pounds of Burgoyne Formalin and 2,088 bottles (20 oz. each) of E. Chlorine were purchased. The use of copper sulphate was discontinued. In stock rearing nurseries,

the use of Formalin was continued, and in the crop rearing nurseries E. Chlorine was tried. Equally good results were obtained from both. As the price of E. Chlorine is only just over 1/3rd of that of Formalin, it is evident that the expenditure on antiseptics will be greatly reduced in future with the proposed larger use of E. Chlorine. Other processes of disinfection, such as sulphur fumigation of rearing houses and washing with perchloride of mercury, etc., were also used for special purposes.

Propaganda.—Production of disease-free seed, through the selected rearers, continued under departmental supervision.

Some of the existing co-operative societies of the silkworm rearers and reelers in Malda are reported to have worked satisfactorily. Three new societies have been started during the year and proposals for others are pending with the Co-operative Department.

The ex-students of sericultural schools, and the selected rearers produced 13,205 *kahans* of disease-free seed cocoons, under departmental supervision, and sold them to professional rearers. The expenditure incurred by them amounted to Rs. 27,938 and the receipts were Rs. 38,765, leaving a profit of Rs. 10,827. In pursuance of the recommendation of the Bengal Silk Committee, at their meeting, dated the 6th May 1925, the nursery staffs commenced demonstration work on improved methods in six principal villages adjacent to departmental nurseries in the districts of Malda, Rajshahi, Murshidabad and Birbhum, and took necessary measures against the outbreak of diseases in cocoon rearers' houses. Also agricultural loans amounting to Rs. 2,135 were granted by the Collector of Malda to 86 rearers for improving their rearing houses. The results were very satisfactory in all cases, and the propaganda work has stimulated a desire for departmental help and guidance among rearers who have not yet had the advantage of our advice. The success of this work in the Malda district is largely due to the personal interest taken by the Collector, Mr. James Peddie, I.C.S.

In view of the satisfactory outcome of the above propaganda, Government has now consented to increase the demonstration staff in the Malda district, and ten new men have been appointed. The scope of the propaganda will be suitably enlarged, and will reach villages with which, on account of lack of staff, it has never before been possible to get into touch.

As a result of propaganda in the Bankura district, the area under mulberry is now 433 acres against 300 acres in 1921. Departmental activities, which were confined to 20 villages in 1924-25, have now been extended to 53 rearing villages. Sixteen thousand layings of *Nistari*, and 1,600 layings of *Chotapolu*, were sold to the rearers from the Government nurseries. Two hundred layings of *Boropolu* were also supplied from Kalitha Nursery for the first time in January last. This development in Bankura is an interesting story. The *Tuntia* Muhammadans of Punisole, Siromonipur, etc., lost their ancestral avocation of silk rearing, through ravages caused by *Pebrine* disease of the silk-worm. Ultimately they became so poor that they took to crime, and punitive police were quartered on them. It was then decided by the authorities that things might right themselves if silk rearing could be revived in the tract. The Sericultural Department, which

held the solution of the problem in disease-free seed, was called in, and subsequent progress has been rapid. It is hoped that the new nursery at Vishnupur will give an additional impetus to the work.

Preliminary work taken up through the co-operative banks in Mymensingh has shown that sericulture is possible in the district, and the Central Bank is now aiming at developments in places where there are rural co-operative societies. The General Manager, Court of Wards Estates, Mymensingh, has also offered to help the Department in the introduction of sericulture in that district.

A small experimental plantation of one bigha of mulberry established in the compound of the Collector of Dinajpur proved a success, and the District Board has now erected a small rearing shed in the kutcherry compound. Rearing has commenced, and if it also turns out to be successful, it will serve as a demonstration centre to the numerous people attending the court.

Sericultural exhibits were sent to the several exhibitions in the Presidency and the demonstrations made caused great interest amongst visitors to the exhibition.

As a result of Miss Cleghorn's propaganda, about 60 bighas of new mulberry have been planted by *bhadralok* in the following places in her circle: Alipur, Behala, Tollygunge, Chinsura, Serampore and Khulna. Most, if not all the land thus planted, was waste land near houses which has for generations been under the typical scrub jungle of the tract, and which of course never brought in any return to its owner. Miss Cleghorn also supplied 300 maunds of mulberry cuttings and distributed about 88 maunds of leaves to the selected rearers of Behala, Barisha and Thakurpukur during the year. Further she has introduced the rearing of eri silk-worms on castor leaves, and there are at present about 59 rearers, working under her supervision. A further large number of people have applied for Miss Cleghorn's advice, but for the present attention is being concentrated on those who have already taken up sericulture, the object being to place these firmly on their legs before proceeding further.

Sericultural education.—The schools at Rajshahi and Berhampore carried on as usual. At Rajshahi seven students out of eight, and at Berhampore two out of three, passed the Final Examination. In all nine students passed in the year 1925-26 from the above two schools, and six were paid rewards for starting model rearing houses. All the ex-students who have been granted rewards with the exception of two at Malda are doing good work.

At its last meeting in April 1926, the Bengal Silk Committee unanimously agreed to recommend to Government that in view of the fact that the majority of the students at the Rajshahi Sericultural School come from Malda, the school should be transferred to the Piasbari Central Nursery in Malda district. The matter is now under consideration.

The primary schools attached to the Piasbari, Amriti and Kumarpur Central nurseries, did good work. It is reported that 80 children, who are all sons of professional rearers, received simple instruction in the elementary principles of improved sericulture. Each of the above schools receives a grant of Rs. 10 per month from the Department. A grant of Rs. 5 per mensem has also been given to the primary school in the neighbourhood of the Kalitha Nursery for sericultural training.

On the recommendation of the Bengal Silk Committee, professional rearers' sons were invited to work at departmental nurseries as apprentices. One hundred and twenty-seven boys took advantage of the offer, and are in this way receiving a year's training in improved methods. These boys are provided with quarters at the nurseries and paid at the rate at which the higher type of labourers are paid. It has been noticed that in some cases there is a certain reluctance on the part of the boys to return to their homes, and in order to counteract this tendency, it has been suggested that two periods of six months would be preferable to one session of a year.

SECTION III—MISCELLANEOUS.

Statistical.—During the year intermediate reports on crops, *viz.*, rice, cotton, linseed, rape and mustard, sesamum (late) and sugarcane were newly prescribed by Government and added to the usual crop forecast list.

Rainfall.—Two rain registering stations were abolished, and four new stations were opened, making a total number of 253 in the Presidency.

Financial.—The receipts and expenditure of the Department as furnished by the Accountant-General, Bengal, are detailed below :—

Expenditure.	Reserved.	Transferred.		Reserved for 13th June 1925.		Receipts.	Progressive figure.
Heads of account.	Non-voted.	Non-voted.	Voted.	Non-voted.	Voted.	Heads of account.	
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.		Rs. A. P.
Superintendence ..	....	6,450 0 0	12,977 15 3	19,809 9 0	48,802 8 7	1. Receipts on account of experimental cultivation.	1,06,226 5 6
Other supervising staff	1,499 4 0	11,950 0 0	56,611 9 6	28,498 5 0	2,26,712 3 3	2. Miscellaneous ..	2,088 3 9
Experimental farms ..	....	....	41,260 12 9	....	1,67,285 5 9	3. Jute ..	....
Agricultural experiments.	7,285 0 0	....	866 6 6	....	26,545 8 9	4. Paddy ..	....
District seed stores ..	....	....	419 7 0	....	762 14 9	5. Sericulture ..	48,077 10 3
Agricultural school ..	....	....	1,677 7 9	....	4,269 7 3	6. Cotton ..	....
Sericulture ..	5,978 1 6	....	46,353 10 0	....	1,68,868 15 0	7. Receipts on account of public exhibition and fair.	172 0 0
Public exhibition and fair.	....	....	200 8 0	....	3,807 5 5		
Total ..	14,762 5 6	18,400 0 0	1,59,528 14 9	48,307 14 0	6,45,528 7 3	Total ..	1,56,564 3 6
						Recoveries of service payments.	2,138 6 9
						GRAND TOTAL ..	1,58,702 10 3

NOTE.—Figures of receipts have been shown here as per account maintained in this office.

Publications.—The English edition of the Bengal Quarterly Agricultural Journal continues its progress, but it has not yet been found possible to reconstruct the Bengali edition in a more popular form so as to attract public support.

Bulletins and leaflets have been published, and the Government Agent for the sale of jute seed has also published a leaflet in large numbers.

It is hoped that it may soon be possible to appoint a propaganda officer when a large increase in publications may be expected.

Conclusion.—There is increasing evidence that the efforts of the Department of Agriculture are gradually winning public opinion to the view that it (the Department) is working on a sound and logical basis; that it has already definitely benefited the country to an extent far exceeding the money spent on it, and that, given necessary support, it will achieve a large and permanent increase in the wealth of the Presidency. In coming to this conclusion, the public are only following the lead of every one who has had experience of the possibilities of honestly conducted scientific investigation. In the year under review, apart from an increased demand for departmental seeds, etc., on the part of the public, and more whole-hearted co-operation on the part of the agricultural and other associations, etc., the gift to the Department of £1,500 sterling (Rs. 20,000) per annum for five years, by the London Jute Association, and the guarantee of Rs. 2½ lakhs given by the Indian Jute Mills Association against possible loss on the sale of departmental seed, are substantial assurances of appreciation which, apart from the material help they convey, give much welcome encouragement to the members of the Department in their work. Gifts of this kind, in aid of scientific work, are common in Europe and America, and the contributions by District Boards towards the capital cost of Government farms in the districts are examples to show that the right spirit is not wanting in Bengal. It is to be hoped that this spirit will develop further in emulation of the fine examples quoted above.

For those who are interested in agricultural improvement, a visit to the central research station at Dacca is recommended. Up to the present the monsoon months have been the best time for such a visit, as all the work on the great staple crops of paddy, jute, sugarcane, etc., is then in progress. The research station is however well worth inspection at any time of year, and visitors are eagerly welcomed, because the staff know that they have good things to show.

Hitherto the refractory nature of the red soil at Dacca, and its poor moisture holding capacity, have been a handicap to a full development of work in the dry weather. The Legislative Council has however just approved funds for a 7″ tube well, which, if successful, will provide irrigation for a considerable area and enable work of far-reaching importance on the cultivation of fodder crops and subsidiary food crops, both questions of vital importance, to be carried out.

Another most welcome decision of the Legislative Council in its August session is the adoption of proposals to improve the pay of officers in the Subordinate Agricultural Service. This will give much encouragement to many deserving officers, whose length of service and conscientious work, have long justified the action in question.

Acknowledgments.—The Department has received much help both official and non-official in its work. Mr. J. N. Gupta, M.B.E., Commissioner of the Presidency Division, and Mr. A. C. Cook, C.I.E., Commissioner of the Burdwan Division; also Messrs. Donovan, Graham, Peddie, Haldar, Gupta, Salik and De, Collectors, respectively of Hooghly, Nadia, Malda, Rangpur, Bogra and Dinajpur have given prestige to departmental work in their jurisdictions. In Jalpaiguri Mr. Townend has succeeded Mr. Nelson, and is resuscitating the Khas Mahal demonstrations, which were suspended on retrenchment. The critical value of help from executive officers has been referred to above, and it is a pleasure to acknowledge the spirit of co-operation which exists. In the subdivisions Mr. S. M. Banerjee, I.C.S., Subdivisional Officer, Manikganj, Babu Kalidas Bagchi, Subdivisional Officer of Jangipur (Murshidabad), and Babu Srimanta Kumar Das Gupta, Subdivisional Officer, Chuadanga, are to be congratulated on their efforts. Rai A. C. Banerjee Bahadur is not only running a paying farm at Sultanpur, Birbhum district, but has organized agricultural classes in the local school and has made a commencement with consolidation of holdings on his estate. Rai K. N. Mullick Bahadur continues to help in the extension of departmental crops in the neighbourhood of his farm at Ranaghat, Kumar Sarat Kumar Roy of Dighapatia proposes to breed pedigree cattle on his farm at Dayarampur, and will thus be the first private person in Bengal to establish a pedigree herd of cattle. Babu Nagendra Nath Mookherjee, Secretary of the Ranaghat Co-operative Societies, is, through his societies, assisting the demonstration of departmental seeds. Babu Purna Chandra Chaudhuri, Secretary of the Manikganj Agricultural Association, is to be congratulated in his continued efforts in connection with the Manikganj Agricultural Show. Rai Sahib Jogesh Chandra Dutta Gupta is a constant helper of the Department in Kaliganj, Dacca district. The munificent and public spirited contributions of the London Jute Association and the Indian Jute Mills Association to assist departmental work have already been acknowledged. It is hoped that they will be an example to others. Several prominent jute firms have rendered assistance to the Department in experimental work and in other ways. The Department is also greatly indebted to the officers of the Imperial Agricultural Service for valuable assistance and advice.

Staff.—I gratefully acknowledge loyal co-operation and assistance from my colleagues, European and Indian. Dr. Hector acquitted himself well as officiating Director in my absence; Mr. Smith's advice on the financial side of departmental activities continues to be of value. Mr. McLean and Mr. Carbery constitute two different phases of straightforward energy and enthusiasm which are invaluable assets to the Department. Mr. Dwijadas Dutta is to be congratulated on the progress he has made, and the same applies to Mr. Sharangapani. Rai Sahib Jamini Kumar Biswas and Babu Kalidas Roy have done good work in their respective capacities of special officers for tobacco and sugar. Babu Tara Nath Roy has done equally well as Field Assistant to the Fibre Expert. Rai Sahib Debendra Nath Mitra is to be congratulated on receiving a title. He and Babus Rajnath Roy, Chuni Lal Mustafi, Amrita Lal Shome and Nalinakshya Bose have done excellent work as District Agricultural Officers, Faridpur, Bankura, Birbhum, Kishoreganj and Nadia respectively. Mr. H. R. Edmunds continues his good work in the Darjeeling district. Babu Satindra Lal Sen Gupta worked successfully at Amarpur School and Babu Santi Prasad

Sen worked well on the Dacca Farm. On the sericultural side Babu Surendra Nath Bose, First Superintendent of Sericulture, and Mr. J. C. Bain did excellent work in the Malda sericultural demonstrations. Babu Jyotis Chandra Roy, Personal Assistant, has given ungrudging help throughout the year, and the same applies to the clerical staff, of whom Rai Sahib Haridas Banerjee, Head Assistant, who has been in charge of cattle census work, Babus Jagadish Chandra Basu, Surendra Nath Roy and Aditya Gopal Goswami deserve mention.

APPENDIX I.

Annual Report of the Economic Botanist to the Government of Bengal for the year 1925-26.

Establishment.—I was in charge of the office up till July 1st. From July 1st to February 20th, I acted as Director of Agriculture, Bengal, in place of Mr. Finlow, who went on leave, during which period Mr. S. C. Sharngapani, Assistant Economic Botanist to the Government of Bengal, was in charge of the office. I resumed charge as Economic Botanist on 20th February. There were no additions or alterations to the staff throughout the year.

Tours.—I spent 36 days on tour throughout the year, and the Assistant Economic Botanist 42 days.

The following were the main items of work in progress:—

Rice.—Apart from Dacca, the most important work in progress is the selection of improved types of the *balam* rices of Barisal, and of improved types suitable for the districts of Bankura, Birbhum and Midnapore.

At Barisal nine selected strains were tested against local cultivators' seed. One of these gave an increased yield of 15 per cent. The others proved no better in actual outturn, though more uniform in flowering and ripening. These tests, however, are only preliminary and will be repeated again this season.

At Bankura similar work is in progress with strains of the local *badkalamkati* and *bhutmuri* rices, the most popular local *aman* and *aus* varieties respectively. For this work tillers of these varieties have been collected from every thana of the district.

A full survey of local varieties is also in progress, and early varieties, both pure line types, and types selected from *aus* and *aman* crosses, sent from Dacca, are also under observation.

At Suri selection work was started with a few of the best local varieties.

At Chinsura, the paddy crop was a failure this year. It was not possible to transplant seedlings from seed-beds owing to drought. Only sufficient could be grown to produce a small quantity of seed for future work.

At Dacca, the collection of *aus* and *aman* varieties were grown as usual, and *aus* crosses and *aus* and *aman* crosses were grown to a further generation. Some of the *aus* crosses were tested for the first time for yield and earliness against *Kataktara* as a standard. Some of these proved equal to *Kataktara* and ripened from a week to a fortnight sooner, but will require to be tested further.

Of the *amans* three pure strains and 2 crosses were tested against *Indrasail*. One of these has been tested against *Indrasail* now for four years, and is both finer in quality and equal in yield, but has the disadvantage of being awned and having a weaker straw. It may probably, however, be preferred to *Indrasail*, in some cases, on account of its fineness.

Outside Dacca, *Indrasail* was tested as usual against standard local rices at Chinsura, Burdwan, Bogra, Rajshahi, Mymensingh and Comilla, with the following results:—

	Per acre. Md. sr. ch.
Chinsura	Crop failed.
Burdwan—	
Indrasail	24 28 0
Local—Dudkalma	23 8 0
„ Jatakalma	22 32 0
„ Kartiksail	18 36 0
Bogra—	
Indrasail	22 9 14
Local—Indrasail	17 18 10

	Per acre. Md. sr. ch.
Rajshahi—	
Indrasail	25 35 0
Local—Gajia	25 13 0
„ Elai	22 30 0
„ Batraj	16 4 0
Comilla—	
Indrasail	30 0 0
Local—Manikraj	28 13 0
„ Chaplash	26 26 0
Mymensingh—	
Indrasail	13 3 0
Local—Biroi	12 5 0

Seed distribution.—The question of paddy seed distribution has been engaging attention for some time. It is a difficult problem for the following reasons:—

(1) Cultivators keep their own seed and do not obtain fresh seed every year.

(2) Generally two or three varieties are grown of different durations and different qualities, hence seed rapidly gets mixed.

(3) It is not possible to transport paddy seed for any distance as the freight is prohibitive.

The only solution of the problem appears to be to have large numbers of small local seed-farms, run by agricultural associations or influential cultivators. These small farms will obtain fresh seed every other year from the Government farms, and will grow this seed for distribution to surrounding cultivators.

A commencement was made with this scheme, and 8 centres were started in Dacca district.

This year 13 centres in Dacca and Mymensingh have already been organised up to date, varying in area from a few bighas to over 100 bighas, in some cases, and a commencement has been made in practically every other district for which suitable departmentally improved types of paddy are available.

Transpiration.—It was again confirmed that the addition of phosphate does affect the rate of transpiration of *aus* paddy.

The figures were as follows:—

Saturation.	Transpiration ratio.		Transpiration per 24 hours per sq. cm. of leaf surface.	
Per cent.	Manured.	Not manured.	Manured (grm.).	Not manured (grm.).
75 ..	480·5	515·6	·19	·22
50 ..	470·6	548·2	·25	·26
33 ..	438·1	542·7	·22	·25

This confirms the result of the previous year, and proves that one effect of the addition of phosphate rice is to reduce the transpiration ratio.

Germination of rice.—*Indrasail* and *Kataktara* were harvested at different intervals from flowering to ripening, to corroborate results obtained in previous years.

It has again been noted from germination tests obtained in the laboratory that *aus* paddy can be harvested 19—23 days in place of about 40 days, the ordinary period, from flowering, without impairing the seed vitality.

As regards *aman* paddy, it can be harvested 23—27 days from flowering in place of about 55 days.

Field trials with *Indrasail* and *Kataktara* will be started this year to see how far the results obtained can be of practical utility.

Pulses.—The pure lines of *matikalai* (*Phaseolus Mungo*) were grown at Dacca as usual. It has already been pointed out that the Dacca Farm is not suitable for *rabi* crops, and that comparative yield-test trials are therefore not possible there.

Fourteen varieties, however, have been isolated, and in order to actually find out whether any of them is suited for soils where pulses are ordinarily grown, these were tried at the Berhampore Farm, and the characters studied. The growth was satisfactory, but the plots were damaged by wild animals, and no definite conclusions could be arrived at. The experiment will be tried again this year.

It has been observed that natural crossing occasionally takes place in this crop. In January 1921-22 some of the pure line plots were observed to be splitting. Those that split have since been kept under observation, to study the nature of inheritance.

Fodder crops.—The experiments of 1925-26 were repeated. A variety of *Pennisetum typhoideum-bajra*, which showed possibilities in 1925, was again tried on a more extensive scale, and sowings were done at different times of year, *viz.*—

January.—Growth depends on the amount of rain; grows best if irrigation facilities are available; seed matures well.

May.—Plants grow tall, but seed does not mature well; can be grown for fodder.

September.—Good growth; seed matures well.

Reana has also good possibilities. The growth at first is very slow, but once it starts, the tillering is very prolific, and the outturn good. It requires almost 5 to 6 months' period for growth.

Juar has been grown for a number of years at the Dacca Farm, and has been a success. The only drawbacks are—

(1) that it is a long period crop, taking from 5 to 6 months;

(2) that it cannot be grown on poor soil; and

(3) that in its early stages of growth it cannot be fed to cattle on account of the prussic acid which is produced.

Bajra is free from all the evils to which *juar* is liable. The outturn per crop is low, but three or four crops can be taken in a year. It can finish its life cycle in 1½ to 2 months. It can be grown as a catch-crop between two other crops, and can be grown at any time of year.

Reana is yet under trial, and beyond the fact that it shows good promise, much cannot yet be said.

Jute Chlorosis.—A series of experiments designed to test whether or not chlorosis in jute is infectious, and whether green plants can be infected by inoculating with juice of chloritic plants, was again carried out, but as before no indication of such infection could be found.

MYCOLOGY.

Babu P. C. Kar, Mycological Assistant, held charge of the section throughout the year.

Tours.—He spent 86 days on tour during the year under review.

The following are the principal diseases which were dealt with:—

Betel-vine.—The study of the betel-vine disease in Bengal was continued. This disease is more or less prevalent everywhere in Bengal, and is of an obscure nature.

It makes its appearance first as a brownish mark on the vines lying on the ground, and subsequently the leaves and then the shoots gradually turn yellow and droop. The brownish mark on the vine later on turns black and spreads on the vine above ground, the nodes become brittle, and ultimately the whole of the creeper withers away.

The disease becomes very active during the rains, when it spreads in an epidemic form in the plantations and destroys them in a very short time.

With the setting in of the cold weather, the virulence of the disease becomes less, and the disease remains in a dormant condition.

As it has been found very difficult to study this disease satisfactorily in the *panbaris* of cultivators, owing to both their apathy and in certain cases to actual opposition, a series of *panbaris* have been erected on the Dacca Farm for the purpose.

In these inoculation experiments have been carried out from time to time with 5 different pure cultures of *Collectotrichum*, *Gloeosporium*, *Fusarium*, *Diplodia* and *Rhizoctonia*, which were isolated from time to time from diseased specimens from different localities, but so far all have failed to produce the disease.

Rhizoctonia destruens Tass, was cent. per cent. successful in infecting the plants, but the symptoms which were produced did not agree with the symptoms characteristic of the disease prevalent in the diseased *panbaris* elsewhere.

The disease has, however, been introduced by bringing soil from diseased *baris* in Khulna.

Other experiments in progress have been—

(1) *Spraying experiments.*—Spraying experiments were conducted at Rajabari with "Harola" (lime-sulphur) solution. There appeared to be some slight decrease in the disease in the sprayed rows, as compared with the controls, but the experiment had to be discontinued owing to opposition on the part of the owner of the *panbari*.

(2) *Manurial experiments.*—Some experiments in top-dressing with Sodium nitrate and castor cake are in progress at Khulna. This was started in last cold weather, and will be continued till next rains. Two applications have so far been given.

There appears to be a slight improvement in the condition of the treated rows.

During the last cold weather a leafspot disease, due to *Phyllosticta*, was also observed in some of the *panbaris* at Dacca Farm. This was checked by spraying with "Harola" 1:80.

Brinjal.—A disease on brinjal plants was reported from Nadia in the beginning of this year, where considerable damage was done to the crop. The outward symptom of the disease was an unusual malformation of the floral organs and leaves. New shoots came out from below, and all became bunchy, and the growth of the plants was checked. It was due either to some sucking insects, or to mites. This disease has not been recorded before.

Mulberry.—A very bad attack of rust and mildew, namely, *Accidium Mori Barc* and *Phyllactinia Corylea (Pers.) Karst.*, was noticed on mulberry plants at the Constantia Sericultural Nursery, Kurseong, during the last rainy season. It was brought on by a heavy shower and foggy weather. The Farm Superintendent was advised to get the plants pruned heavily from the ground level, leaving about 2—3 inches of the stem, and to destroy all cuttings and leaves thoroughly by burning, and then to apply lime at the rate of 12 maunds per acre. Spraying experiments will be conducted later with *Resin Bordeaux* mixture.

Paddy.—Considerable damage was done to certain paddy crops below Diamond Harbour in the 24-Parganas. The paddy which is generally grown in the Sunderbans is a variety known as "Patnai", and it is transplanted. It was reported that in years when there is good rain, the cultivators get some crop, but when there is very little rain, there is a total failure of the crop, as was the case last year. This is probably due to the fact that the saline water from rivers which flow on two sides of the plots, percolates through the embankments. This gets diluted with rain water when there is a good shower of rain.

But in the year when there is very little rain, on account of concentration of salt, the plants cannot develop roots properly, nor can they produce ears.

Jute.—A bad attack of *Rhizoctonia* was observed in a plot where jute has been grown for several years. It was probably due to an accumulation of the *fungus* (*Sclerotia*) in the soil.

Sugarcane.—Attack of *Red-rot* was very bad on sugarcane, CO 242. Smut was observed on some of the thin canes.

Areca Palm.—Further inoculation experiments were undertaken with a culture of *Thielaviopsis* on Areca palm plants grown in pots, but it has again failed to produce the disease (*Bud-rot*). It seems doubtful whether this fungus is responsible for "Bud-rot" disease of Areca palm.

Sword-bean.—An attack of *Rhizoctonia destruens* was observed for the first time on some healthy plants of sword-bean which were destroyed.

Cabbage and cauliflower seedlings.—A disease of a serious nature was noticed on some of the seed-beds, close to each other at Dacca Farm, as a result of which the seedlings began to die in patches, from an attack at the collar. When examined, no fungus was found responsible for the death of the plants. A yellowish juice was observed at the cut ends of some plants which were incubated, and after examination, it was found to be bacteria. The disease was successfully checked by spraying the beds with ·25 per cent. solution of *Formaldehyde*.

Potato.—As trouble was experienced at Dinajpur and other surrounding localities in storing local seed-potato for next year's sowing, an experiment was undertaken at Dinajpur Farm with a quantity of selected seeds—

(1) A lot was treated with a solution of corrosive Sublimate (1 gram. in 1 litre of water, *i.e.*, 1:1,000) for one hour. They were then dried and subjected to petrol fumigation in an airtight room at the rate of 1 pint petrol to every 200 cubic feet of space for 24 hours, and then stored loosely in gunny sacks and placed on bamboo *machans*.

(2) A second lot was stored loosely in gunny sacks, without any treatment, and placed on the *machan*.

(3) A third lot was spread on the *machan* without any treatment.

The result remains to be seen.

Parcels.—Eight parcels of specimens were received and reported on.

Exhibition.—Mycological exhibits were sent to the Faridpur and Dacca Social Service Exhibitions.

ENTOMOLOGY.

Babu P. C. Sen continued to carry out the work of the Entomological Assistant throughout the year. He spent 61 days on tour, investigating insect-pests and attending agricultural exhibitions. He has submitted the following report of his work:—

The most important pests observed and dealt with during the year were the following:—

Mango Weevil (*Cryptorhynchus gravis*).

Mango Leaf-cutting weevil (*Eugnamptus marginalis*).

Mango-hopper (*Idiocerus atkinsoni*).

Mango Tree-borer (*Rhytidodera simulans*).

Mango Shoot-borer (*Alcides frenatus*).

White Ant (*Termes Sp.*).

Citrus Leaf-miner (*Phyllocnistis citrella*).

Litchi Mite (*Eriophyes Sp.*).

Rice Fulgorid (*Delphax Sp.*).

Jute Hairy Caterpillar (*Diacrisia obliqua*).

Jute Semilooper (*Cosmophila Sabulifera*).

Jute stem Weevil (*Apion Sp.*).

Large Brown Cricket (*Brachytrypes portentosus*).

Pink Bollworm (*Platyedra gossypiella*).

Cotton Leaf-roller (*Sylepta derogata*).

Cotton Jassid (*Empoasca gossypii*).
Cotton Bollworm (*Earias fabia*).
Yellow Cotton Scale (*Cerococcus sp.*).
Red Cotton Bug (*Dysdercus cingulatus*).
Potato Moth (*Phthorimaea Operculella*).
Greasy Surface caterpillar (*Agrotis sp.*).

The special items of work are noted below:—

(1) **Mango weevil.**—Careful search was made, as usual, during the fruit season, but no mango weevil in any stage was found in the mangoes of the farm orchard.

(2) **Large brown cricket.**—The pest was found damaging jute, cutting the young plants in the early stages of growth. The crickets were driven out of their burrows by pouring in a little kerosinised water and then they were killed. There was no trouble afterwards.

(3) **White ant.**—Calcium cyanide (both dust and granular) was tried, by pouring in small quantities into holes, which were afterwards closed, of a large number of ant nests, and it was found generally effective. Dr. Brittain, a representative of Fumigators, Limited, also conducted experiments here with calcium cyanide powder on a number of white ant nests. The powder was blown into the nests, by means of a foot-pump, and was effective. In most cases the queens were found dead. It will be tried on a large scale next year.

(4) **Potato moth.**—Report of potato moth and other rots damaging stored potato in Dinajpur was received. A potato storage experiment was started there in March 1926, in collaboration with the Mycological Assistant. The potatoes were treated with fungicide and insecticide and then storted in gunny bags on bamboo *machans* in a ventilated, thatched house.

(5) **Greasy surface caterpillar (cut-worm).**—The pest was bad in Mymensingh district. Instructions were given to irrigate fields, if possible, or to handpick the caterpillars late at night, when they are found in large numbers on the leaves.

(6) **The lichi mite.**—This pest was found bad on a few litchi trees of the farm orchard. The affected leaves were plucked off and destroyed to keep down the pest.

(7) **Fumigation.**—Pulse and cotton seeds were fumigated with Carbon bisulphide whenever required.

(8) **Exhibitions.**—Entomological exhibits were sent to Faridpur and Outshahi (Dacca) Swadeshi Exhibitions, and also to the Manikganj Exhibition. The Entomological Assistant himself attended the Faridpur and Dacca Social Service Exhibitions with exhibits and explained them to visitors.

(9) **Training.**—The 2nd year school boys of the Secondary Agricultural School, Dacca, were given notes on insect-pests and remedies. They were also examined on the subject in the final examination.

(10) **Parcels.**—A number of parcels of specimens were received and reported on.

(11) **Enquiries about crop pests.**—A note on insect-pests and insecticides was written and submitted to the American Consul-General, as desired by him. A note on wild animals damaging crops was submitted to the Imperial Entomologist. Instructions about insect-pests were given to various enquiries.

(12) **Supply of specimens.**—Two specimens of scale insects on citrus trees were sent to Mr. Chamberlain of California (U. S. A.) Two specimens of sandflies (*Phlebotomus argentipes* and *Phlebotomus minutus*) were sent to the school of Tropical Medicine, Calcutta, as requested. Two species of honey bees (*Apis dorsata* and *Apis indica*) were sent to Mr. G. A. Mavromoustakis, Limassol, Cyprus.

(13) **Publication.**—The following bulletins were published:—

(1) Bulletin No. 4 of 1925 (Short notes on the more important insect-pests of main field crops and a few important insecticides). Published in English and Bengali.

(2) Bulletin No. 5 of 1925 (Tour report of Rai Bahadur C. S. Misra, First Assistant to the Imperial Entomologist, to enquire into the causes of failure of Lac cultivation in the Mathurapur Zamindari in Malda district). Published in Bengali.

G. P. HECTOR,
Economic Botanist, Bengal.

APPENDIX II.

Annual Report of the Fibre Expert, Bengal, for the year 1925-26.

Charges.—Mr. McLean was in charge till the 28th February 1926 when he proceeded on leave. I took charge of this section on the 8th March 1926 in addition to the duties of Assistant Director of Agriculture.

Mr. N. C. Basu was the Assistant Fibre Expert throughout the year.

Babu T. N. Roy, Field Assistant to the Fibre Expert, Bengal, remained in charge of the Second Economic Botanist's office, in addition to his own duties from 2nd September to 31st December 1925 on account of Mr. Datta's taking leave. Babu Surendra Nath Basu, Bacteriological Assistant to the Fibre Expert, Bengal, went on leave on 19th February 1926, and Babu Khitish Chandra Banerjee acted in his place from the 1st March 1926.

Tours.—Mr. McLean toured 106 days, and I was on tour for 7 days during the year. The staff were out for 145 days.

The season.—The price of jute was very high during the season, reaching the phenomenal level of Rs. 30 per maund. Even jute of inferior quality, whether dry or moist, had a ready market and fetched high prices. This was owing to the very unfavourable season, which destroyed whole areas in the Mymensingh district. The prospects of a bumper crop from the early heavy sowings were not fulfilled. Heavy rains came early in the season when the jute crop could not stand too much with the result that plants became water-logged and stunted, and in many cases never recovered. Traders became excited and rushed up the price in a very short time to rates that had never been before realized by cultivators.

Work.—The general line of work as done in the previous year was continued. Jute fibre took up most of our time, but we continued to examine and report on other fibres, such as sunn hemp, sida, rhea and agaves. Much attention was paid to arranging a supply of guaranteed jute seed from Bihar. Cultivators have been very satisfied this year as evidenced by their paying Rs. 35 per maund for K. B. and Rs. 45 per maund for C. G. seed, and there being no carry over.

Varietal trials of jute.—Comparative tests of departmental jute with Fanduk and local varieties were continued this year, with a view to prove the superiority of the departmental jute over the so-called fine variety of jute, namely, Fanduk, and the best local varieties. The fibre from these experiments was sent to Calcutta and Dundee for assessment. Last year jute was assessed both at Calcutta and at Dundee. Samples were sent to these places without any labels showing the name of the variety or of the place of origin, only serial number being put on the labels. These were deciphered after the assessment was made. The following tables show the results of Dundee and Calcutta assessment. These were on the jute crop of 1924:—

Serial No. for Dundee.	Place of origin.	Name of varieties.	Opinion of assessors in Dundee.
1	Dhaleswar Char ..	Local ..	Resembles Narayanganj fibre of fair length and good colour, although somewhat brittle.
2	Ditto ..	Fanduk ..	Rather like Serajganj fibre possessing excellent strength and lustre, and might be equal to the bottom of Diamond quality jute. The length is also good, and has been carefully selected.

Serial No. for Dundee.	Place of origin.	Name of varieties.	Opinion of assessor in Dundee.
3	Dhaleswar Char ..	R. 85 ..	Resembles as in the case of head No. 1 Narayanganj fibre, but of a better quality than No. 1, colour is very good, and the strength is also better than No. 1. There is less harshness here and not nearly the same tendency to brittleness, and the jute would be a very good spinning quality.
4	Ditto ..	D. 154 ..	Similar in quality No. 2, *viz.*, Serajganj, but perhaps slightly less strong, although good colour and lustre, and is also a very good spinning quality.
5	Messrs. Landale & Clark, Ltd., Serajganj.	R. 85 ..	Fair fibre as regards quality. The colour, however, is only fair, although spinning quality is good. The length is short and altogether is not quite satisfactory.
6	Ditto ..	Fanduk ..	Is similar to Nos. 5 and 7 in general quality, but possesses a very bad feature, namely, that in the middle of the head, there is a distinct collection of harsh root, which completely spoils the jute as spinning material.
7	Ditto ..	Local ..	Same as No. 5.
8	Ditto ..	D. 154 ..	Similar again to the previous 3, and here it is evident that the jute has been most carelessly handled as regards retting. In the state in which it was examined would be quite unfit for Dundee consumption.
9	Messrs. Landale & Clark, Ltd., Haldibari.	R. 85 ..	A long strong fibre, slightly harsh, and has a striking resemblance to lightning fibre.
10	Ditto ..	Fanduk ..	Resembles No. 9, but very much coarser, and also much more rank, possessing a great deal of speck, which would be difficult to remove on account of its strong adherance to the fibre.
11	Ditto ..	Local ..	Also a long strong fibre, but poor in colour, although having slightly better lustre than head No. 10. The jute in this head would probably spin to better advantage than the jute in No, 10 head.
12	Ditto ..	D. 154 ..	Resembling somewhat No. 10, being long and fairly strong, but the material here is slightly softer and would not spin so well.

Serial No. for Dundee.	Place of origin.	Name of varieties.	Opinion of assessor in Dundee.
13	Government Farm, Mymensingh.	R. 85 ..	Long fibre, fair lustre, but quite unsuitable for Dundee. The colour is very poor, and possesses a very heavy root end.
14	Ditto ..	Fanduk	It was almost impossible to examine in a proper manner. The fibre here was very dirty and badly retted. Could only be considered as equivalent to heart bottom numbers.
15	Ditto ..	Local	
16	Ditto ..	D. 154 ..	Also a long fibre and very similar to No. 13.
17	Messrs. Narayanganj Co., Narayanganj.	R. 85 ..	Similar in characteristics to No. 20, although somewhat cleaner, and in this way more satisfactory as a spinning fibre.
18	Ditto ..	Fanduk ..	Is very similar to head No. 19 taken from case No. 1. The fibre was quite good although somewhat harsh to feel. The colour was good and the strength was good, although short in length, would spin fairly well.
19	Ditto ..	Local ..	A very good fibre, but somewhat harsh to feel, although it would spin quite well. The colour is good and the strength is good, although the length is not so satisfactory.
20	Ditto ..	D. 154 ..	Fibre of fair length and strength, lustre satisfactory, although tendency to roughness at end. In general appearance the quality of the fibre is perhaps equal to a bottom number of a Dacca —A. C. N.
21	Government Farm, Rangpur.	R. 85 ..	Resembles somewhat Dacca fibre, possessing excellent colour, and is very well grown, having a very good lustre as well as strength.
22	Ditto ..	Fanduk ..	Resembles No. 21, but is a very softer fibre, and would not spin so satisfactorily.
23	Ditto ..	Local ..	Very similar to No. 22, although considerably shorter.
24	Ditto ..	D. 154 ..	Might have been taken from some bales as No. 22 as it is almost identical to No. 22 head.

Serial No. for Dundee.	Place of origin.	Name of varieties.	Opinion of assessor in Dundee.
25	Government Farm, Pabna.	R. 85 ..	Long, soft, weak fibre resembling lightning quality, but very poor.
26	Ditto ..	Fanduk ..	Same as No. 25.
27	Ditto ..	Local ..	Good enough to be likened to a heart bottom number, possessing a very heavy root end.
28	Ditto ..	D. 154 ..	The same as No. 27, although slightly better as regards length and not so heavy root end as in No. 27.
29	Messrs. Landale & Clark, Ltd., Sarishabari.	R. 85 ..	Fibre of fair length, might be considered as being equal to the top number of a heart. It has also, however, a fairly heavy end, lacking entirely in lustre. The strength was fairly good and the colour was also fairly good.
30	Ditto ..	Fanduk ..	Could only be considered as good rejection. The fibre is fair, but very short, and has a very heavy root end.
31	Ditto ..	Local ..	Is the same as No. 29.
32	Ditto ..	D. 154 ..	Are just the same as No. 30, and might have been taken from the same bale.
33	Government Farm, Bogra.	R. 85 ..	Are just the same as No. 30, and might have been taken from the same bale.
34	Ditto ..	Fanduk ..	Medium length, fairly strong, but distinctly harsh and rank, and possessing also heavy root end. would only be suitable for a low grade yarn.
35	Ditto ..	Local ..	Slightly better fibre than 34, but very similar as regards other characteristics.
36	Ditto ..	D. 154 ..	In this head, the fibre is slightly better than No. 35, although a heavy root end is also strongly in evidence.
37	Messrs. Landale & Clark, Ltd., Akhaura.	R. 85 ..	Might all have been taken from the same bale. The fibre was quite good, possessing a fair amount of lustre. The colour was also good, but there was a heavy end on each sample. The length was moderate, and the fibre possesses a fair amount of strength.
38	Ditto ..	Fanduk ..	
39	Ditto ..	Local ..	
40	Ditto ..	D. 154 ..	

Serial No. for Dundee.	Place of origin.	Name of varieties.	Opinion of assessor in Dundee.
41	Messrs. Sonakanda Baling Co., Ltd., Narayanganj.	R. 85 ..	Possesses good colour, but rather harsh, although quite strong. The fibre is short, but of fairly good spinning quality.
42	Ditto ..	Fanduk ..	Are all similar to No. 41.
43	Ditto ..	Local ..	
44	Ditto ..	D. 154 ..	
45	Government Farm, Kishoreganj.	R. 85 ..	Quite good length and spinning quality, somewhat dull in colour and lacks lustre. The strength is fairly good, but inclined to be fuzzy and would create perhaps a considerable amount of waste in the process of preparing.
46	Ditto ..	Fanduk ..	Similar in all respects to No. 45.
47	Ditto ..	Local ..	The fibre here showed good length, but very fuzzy, and although colour generally would be considered good there was also a heavy end. The crop end was also heavy, and as regards strength was rather weak.
48	Ditto ..	D. 154 ..	Also similar to No. 45 in characteristics with the exception of the length which in this case is longer.
49	Messrs. Landale & Clark, Ltd., Bhairab.	Fanduk ..	The lustre here was better than in the previous 4 heads (37, 38, 39 and 40), and although the length and were fair, there was also dirty end.
50	Ditto ..		
51	Ditto ..	Local ..	Same class of fibre as Nos. 49 and 50.
52	Ditto ..	D. 154 ..	
53	Messrs. Goodnail Baling Co., Narayanganj.		A very nice spinning fibre, possessing good lustre and good colour, although again there was a tendency to a reddish tinge. The fibre was inclined to be short but quite strong.
54	Ditto ..	Fanduk ..	
55	Ditto ..	Local ..	
56	Ditto ..	D. 154 ..	

Serial No. for Dundee.	Place of origin.	Name of varieties.	Opinion of assessor of Dundee.
57	Messrs. Landale & Clark, Ltd., Narayanganj.	R. 85 ..	These four samples indicate fibre of fair length and of good spinning quality, lacking however somewhat in colour and lustre, and inclined to harshness towards the end.
58	Ditto ..	Fanduk ..	
59	Ditto ..	Local ..	
60	Ditto ..	D. 154 ..	
61	Messrs. M. David & Co., Narayanganj.	R. 85 ..	Very short fibre, but possessing many good features, including lustre. Rather dirty end and colour showing a slight tendency to redness.
62	Ditto ..	Fanduk ..	Fibre very level and straight, and would spin very well indeed. But on account of the heavy crop end and the rather heavy root end, the remaining fibre would be very short, and this lack of strength would detract considerably from its value.
63	Ditto ..	Local ..	Very short, but excellent fibre strength and spinning quality are also very good. The colour, however, is not so good and is rather inclined to possess a reddish tint and also has a rather heavy root end for the quality of the fibre and also a heavy crop end.
64	Ditto ..	D. 154 ..	Practically the same as No. 63.
	Dacca Farm, 1924—		
	Plot No. 1 ..	D. 154 ..	The jute in all those samples showed up a very nice fibre, which had been very well handled. The colour was excellent and the jute also had an excellent lustre and very good length. The end of the heads was also very clean, and generally the quality of the fibre for spinning purposes was excellent.
	Plot No. 27 ..	Kalirchar ..	
	Plot Nos. 2, 39 ..	3	
	Plot Nos. 4, 2/128	....	
	Plot No. 28 ..	R. 85 ..	
	Plot No. 6 ..	D. 27 ..	
	Plot No. 31 ..	Kalirchar ..	
	Plot No. 12 ..	D. 154, S. P.	
	Plot No. 25 ..	Fanduk ..	
	Plot Nos. 8, 3, 39	....	Soft fibre, very hairy and distinctly weak, the colour is fairly good, but is lacking entirely in lustre.
	Plot Nos. 10, 1/128	....	Similar to plot No. 8, although possessing slightly more lustre. The jute, however, is distinctly weak and the lack of strength here is a very bad feature.
	Plot No. 29 ..	Fanduk ..	Very similar to plot No. 10, having good colour, but is very soft, and is also lacking in lustre as well as strength.

Opinion of the Indian Jute Mills Association.

[Name of 10 best samples out of 72.]

Serial No. for Calcutta.	Name of variety.
	A
70	Fanduk, Dhaleswar.
71	R. 85, do.
41	D. 154, Rangpur.
42	Local, do.
43	Fanduk, do.
44	R. 85, do.
45	D. 154, Narayanganj.
46	Local, ditto.
27	Fanduk, Akhaura.
	B
41	D. 154, Rangpur.
42	Local, do.
43	Fanduk, do.
44	R. 85, do.
69	Local, Dhaleswar.
70	Fanduk, do.
71	R. 85, do.
72	D. 154, do.
47	Fanduk, Narayanganj.
	C
23	Fanduk, Sonakanda, Narayanganj.
41	D. 154, Rangpur.
42	Local, do.
43	Fanduk, do.
44	R. 85, do.
45	D. 154, Narayanganj.
46	Local, ditto.
72	D. 154, Dhaleswar Char.
21	D. 154, Sonakanda, Narayanganj.
	D
72	D. 154, Dhaleswar Char.
71	R. 85, ditto.
70	Fanduk, ditto.
69	Local, ditto.
23	Fanduk, Sonakanda, Narayanganj.
24	R. 85, ditto.
41	D. 154, Rangpur.
42	Local, do.
44	R. 85, do.

Serial No. for Calcutta.	Name of variety.
	E
41	D. 154, Rangpur.
42	Local, do.
43	Fanduk, do.
44	R. 85, do.
45	D. 154, Narayanganj.
46	Local, ditto.
47	Fanduk, ditto.
48	R. 85, ditto.
70	Fanduk, Dhaleswar Char.
	F
41	D. 154, Rangpur.
42	Local, do.
43	Fanduk, do.
44	R. 85, do.
11	Fanduk, Narayanganj.
12	R. 85, ditto.
17	D. 154, Kishoreganj.
19	Fanduk, ditto.
	G
70	Fanduk, Dhaleswar Char.
71	R. 85, ditto.
41	D. 154, Rangpur.
42	Local, do.
43	Fanduk, do.
44	R. 85, do.
45	D. 154, Narayanganj.
46	Local, ditto.
23	Fanduk, Sonakanda.
	H
69	Local, Dhaleswar Char.
70	Fanduk, ditto.
41	D. 154, Rangpur.
42	Local, do.
43	Fanduk, do.
44	R. 85, do.
45	D. 154, Narayanganj.
46	Local, ditto.
24	R. 85, Sonakanda, Narayanganj.
16	R. 85, Bhairab.
	I
72	D. 154, Dhaleswar Char.
43	Fanduk, Rangpur.
70	Fanduk, Dhaleswar Char.
69	Local, ditto.
44	R. 85, Rangpur.
47	Fanduk, Narayanganj.
71	R. 85, Dhaleswar Char.
20	Local, Kishoreganj.
28	R. 85, Akhaura.
39	Fanduk, Pabna.

The results tend to show that quality of the fibre depends more on the method of preparation and to a certain extent on the locality rather than on the variety. To decide the point further, it is contemplated to carefully handle a small portion of the crop from each locality and the remainder according to local practice.

The results of the variety experiments are given below:—

Serial No. of plots.	Name of variety.	Outturn per acre.	
		Mds.	sr.
1.	D. 154	20	10
2.	Japanese hybrid	12	20
3.	D. 154	20	0
4.	39 x ?	20	0
5.	D. 154	22	0
6.	D. 154 (special)	23	20
7.	D. 154	25	0
8.	1/128	23	0
9.	D. 154	21	10
10.	D. 27/9	20	0
11.	D. 154	24	30
12.	Japanese hybrid	11	0
13.	D. 154	22	20
14.	39 x ?	24	0
15.	D. 154	15	20
16.	D. 154 (special)	18	10
17.	D. 154	18	20
18.	1/128	22	20
19.	D. 154	22	20
20.	D. 27/9	17	20
21.	D. 154	24	30
22.	Japanese hybrid	11	20
23.	D. 154	25	30
24.	39 x ?	21	10
25.	D. 154	20	20
26.	D 154 (special)	20	20
27.	D. 154	21	0
28.	1/128	20	20
29.	D. 154	21	10
30.	D 27/9	21	0

The results indicate that the respective yielding capacities of all the races tried, excepting the Japanese hybrid, are within about 1 maund of fibre per acre, but that D. 154 is still unbeaten.

Jute seed production.—Two thousand maunds of *capsularis* and 800 maunds of *olitorius* seed were sold this year. The demand for jute seed has been very great and only a small proportion of the demand could be met. Hundreds of cultivators had to go away disappointed for want of seed. Very few people realise the difficulty of producing such high quality seed in such a large quantity, and it is time that cultivators should try to keep their own seed. Taking advantage of this large demand for departmental seed, dishonest dealers are importing inferior seeds and selling the same as Government seed. Cultivators should guard against this by consulting the District Agricultural Officer. Arrangements are now being made to produce a larger quantity of jute seed this year.

Sunn hemp.—A few plots from seeds of single plants were laid out with a view to isolation of pure lines. Though the plants were tall and healthy, they practically failed to set seed.

Other fibres.—The work on sida, rhea, and agaves was continued. A quantity of sida fibre was sent to Dundee last year for report from manufacturers' point of view. The report has since arrived. The following extracts from their report will show its present position as compared to jute:—

"Fibre has been well handled and is absolutely free from speck, with no trace of heavy end. From the spinning point of view would be quite satisfactory although the trade in Dundee could not afford to pay such an excessive premium as indicated, considering the purpose for which jute could be used."

* * * * * * * *

"The sida fibre is according to the samples examined, of no greater value to the trade than jute, and under these circumstances, therefore, and having regard to the smaller yield per acre which has been indicated the opinion is formed that it would be inadvisable to grow this class of fibre upon land where the ordinary jute plant could be successfully cultivated".

The premium given for good jute also is not sufficiently attractive to the cultivators to induce them to produce a staff of high quality. So long as this state of things exists, fibre like sida will never be remunerative, and high class jute also will gradually disappear from the market.

As the old rhea plot at the Dacca Farm has nearly gone out, a new plot has been laid out for this. It is contemplated to conduct more elaborate experiments on the extraction of the fibre as soon as sufficient stems will be available for the purpose.

A new plot has been laid out for selected agave plants and bulbils from these have been planted.

Laboratory work.—Analysis of jute plants from the manurial plots has been continued.

A paper was submitted by Mr. N. C. Basu on the estimation of potash by perchloric acid method for the Science Congress at Bombay.

A number of samples of fibre were examined, identified and opinions given on them.

Germination tests of about 1,500 samples of jute seed were made.

Bacteriological work.—Investigations on the cause of *pan* disease were continued by the Bacteriologist attached to the Fibre Section. Having been unsuccessful in attempting to produce the disease by inoculation with pure cultures on betel vines grown in tubes, attempts were made to propogate it artificially on vines grown in the new borojes erected at the Dacca Farm. Several inoculations were made with the ten varieties of cultures isolated from the diseased betel vines of different places and also with six new cultures isolated from the diseased vines of Bikrampur, but so far the plants have proved resistant to inoculation with pure culture. Manurial experiments at Rajabari had to be given up as owners objected to outsiders entering their borojes. Similar incidents took place at Maheshwarpasha and Bonhooghly. This attitude on the part of the boroj owners has hampered the progress of the work and placed unnecessary obstacles in the way of carrying out the experiments successfully. Symptoms of the disease appeared in the borojes at the Dacca Farm after contaminating the soil with the soil of the diseased borojes of other places. The plants in the borojes at the Dacca Farm are now mature, and experiments will be carried on these. From the results of the experiments so far carried out, it seems that broadcast spraying with 0·5 per cent. Formal in solution of 0·5 per cent. E. C. solution checks the disease to some extent, but no recommendation can yet be made.

Acknowledgments.—I have to acknowledge with thanks the help of many people, but particularly I wish to thank Messrs. Landale & Clarke, Ltd., Messrs. Bird & Co. and Messrs. Sinclair Murray & Co., for giving us practical help with the field tests. Our thanks are also due to the Calcutta Jute Mills Association and the Dundee Chamber of Commerce for valuation of jute fibre.

F. SMITH,

Assistant Director of Agriculture in charge,
Fibre Expert Section, Bengal.

APPENDIX III.

Annual Report of the Second Economic Botanist to the Government of Bengal for the year 1925-26.

Staff.—I was in charge of the office of the Second Economic Botanist during the year 1925-26, and was on leave for four months when Babu Tara Nath Roy worked in my place. I was assisted as usual with one assistant and two fieldmen.

Tour.—I was out on tour for 8 days, Babu Tara Nath Roy for 22 days and the staff for 202 days during the course of the year and visited the farms where my work was being carried on.

The crops under my study are noted below:—

(1) Cotton—

Gossypium Hirsutum.

Gossypium Neglectum Sp.

(2) Deep water paddies (*Oryza Sativa*).

(3) Oilseeds—

(1) Toris (*Brassica Napus Var. dichotoma*).

(2) Mustard, Rai (*Brassica Juncea*).

(3) Linseed (*Lium Ulitatissimum*).

(4) Pulses—

(1) Masuri (*Lens Esenlenta*).

(2) Khesari (*Lathyrus Sativus*).

(3) Peas (*Pisum Sativum*).

(5) Fodder crops.

1. **Cotton.**—Several pure lines of cotton having definite characters have been isolated both from amongst the Americans and the Bengals. These are being kept up at Dacca for detailed study of their different characters from a biometrical point of view. The highest lint length types amongst the Americans are all late in maturing and the bolls are picked till up to the middle of March in some cases. The early types of Bengals which have high lint length as well, have generally very low ginning percentage, the Bengal cottons which combine moderately high staple length with good ginning percentage are generally medium to late, but earlier than the late types of Americans.

As noted in the last year's annual report, the early Americans and Bengal 2 (35) have been multiplied sufficiently. But Bengal 2 (35), which is the earliest of the Bengals, have a low ginning percentage, and its only qualification is its earliness and staple length. Of Bengal 58, which has been selected for high staple, only few plants have been found which have come up to the ginning percentage of 25, others being still further down in ginning percentage. In the Bengal cottons the work of selection has been carried on with a view to a combination of a ginning percentage of 27 and higher with lint length combination of 22 mm. or 7/8". Several types of high lint length and fairly high ginning percentage have been isolated from amongst the Indian cottons, and these are being carefully studied. The main work of the year has been to carefully note the ginning percentage of all the selections of Bengal which were being carried out for the last few years for the elimination of those having low ginning percentage.

Cotton was grown at the farms at Bankura, Suri and Bolpur in the Western Bengal districts. The cottons were grown at Bolpur for the first year, and as we could not control the cultural trial in any way, the results cannot be utilised except in so far as giving an indication that cotton can be grown in the area. If any conclusion is to be drawn, the experiments must be conducted under our own supervision, but this is not possible with our limited staff.

Both at Bankura and Suri, the early cottons bred at Dacca have given better results, and at both these places the Sindwahii cross, a type of cotton bred at Nagpur, have fared very badly. At Suri, we have received an outturn of 35 pounds of *kapas* from an area ·095 acre, *i.e.*, at the rate of 388 pounds of *kapas*

per acre, a figure which is not altogether discouraging. This plot was situated in a level quite above the paddy lands. Cotton was also grown in a plot of the high lands where the soil is very shallow, and though there was profuse flowering, but the bolls set were very scanty in proportion to the flowering. Next year we are trying cottons, selected at Dacca, in the different soil, types found in the farm at Suri.

At Bankura, the early Bengal cotton B 58 and 2 (35) both bred at Dacca gave better outturn of seed cotton than the early Americans, the late types having fared very badly. The outturn of a mixed crop of cotton with maize gave an outturn of 369 pounds of seed cotton *kapas* per acre, which is not a very bad outturn considering the poor condition of the soil of the farm and its inability to grow paddy. The problem at Suri and Bankura seems to be the development of early types of cotton. So far in all these early types the length of the staple bears an inverse relation to the quantity of lint per seed. The Dharwar Americans, the original stock of all our selected Americans, have a much higher ginning percentage than the Bengal cotton having the same lint length, but the high linted types of Americans which are usually a late crop cannot be grown successfully in Bankura and Suri. Several early types are being carefully bred up at the Dacca Farm for being grown in the Western Bengal districts where these forms would ultimately be given a trial.

The winter cotton grown in the char land was a failure owing to the ravages of cut-worms, which broke out as a serious pest to *rabi* crops in Char Doleswar. Ninety-five per cent. of the seedlings were cut at the base by the cut-worms and secondary growth was started very late in others. The severe hail storms which were very frequent this year told their further havoc on the plants and those surviving were all killed.

Amongst the pest noticed in cotton was the leaf rollar, stem borer, cotton red bug and a pink boll work as well. The damage was not very heavy with any of these crops. This part of the work has not been studied in detail so far, but require close attention as to be forewarned for the future expansion of cotton cultivation.

The types of cotton conforming to the description of the famous muslin cotton of Dacca, as noted in last year's report, could not be grown in the char lands, and a separate plot has been set apart at the Dacca Farm to study this as a winter crop from the next year.

Cultural experiments on cotton were tried at Bolpur and also at Dacca, and both are being repeated. The experimental work at Bolpur may have to be postponed pending a further strengthening of the subordinate officers of the section.

It has not been possible to study "Comillas" cotton at the Dacca Farm, but now that the farm at Rangamati is approaching completion, it is hoped that the problem may now be tackled seriously. The farm will be ready for occupation during 1926, and the agricultural operations would just be started from the next year.

2. **Deep water paddies.**—As a result of last year's field and laboratory studies, 46 pure lines of deep water paddies have been isolated for further trial with reference to number of grains per ear, tillering habit, and strength and thickness of the stem. These were carefully studied for further selections during the course of the next growing season. As a result of studies of the last five consecutive years, all the pure lines of the deep water paddies are being systematically classified on their botanical as well as agricultural characters. It is hoped that the work will be finished in course of the current year. The local deep water paddies have been grown this year for isolation of pure types and to study their characters.

3. **Oilseeds.**—The selected toris have been multiplied at the Berhampore and Mymensingh farms, but the quantity available does not yet justify distribution in a large scale. The pure lines are being kept up at the Dacca Farm being grown at Char Doleswar.

The Bengal linseeds are being classified and selections are being made with reference to high yield and habitat.

4. **Pulses.**—The work on pulses received a set back owing to my absence for a long period as the other works absorbed all the attention of the staff and my successor. The pure lines were simply bred to their types, and the laboratory work on these has not yet progressed far enough to justify conclusions.

5. **Fodder crops.**—Japanese millet (*Panicum crusgalli*) has since been largely multiplied, and it will be given an extensive trial in each of the different farms of Bengal. Two other exotic fodder crops show signs of promise, but these are

mostly suited as permanent pasture grasses. They will be grown at the Dacca Farm for multiplication and further studied before being sent out to the districts. The several new types of fodder crops obtained from America for trial as a *rabi* crop could not be given a decent trial as the seeds arrived rather late. Seeds are being imported for trial in a *kharif* season also.

The staff allotted to this section has been found to be quite insufficient to cope with the work in progress, and the activities of the section have necessarily to be curtailed. There is difficulty also in regard to house accommodation for the subordinate officers, who cannot be fully utilised if they have to live at a distance from the farm.

The Director of Agriculture, Bengal, and Dr. Hector have always come forward to lend me a helping hand whenever needed, and I am grateful to them for consideration shown.

D. DUTTA,

Second Economic Botanist, Bengal.

APPENDIX IV.

Annual Report of the Agricultural Chemist to the Government of Bengal, Dacca, for the year ending 31st March 1926.

Charge.—I held charge of the office of the Agricultural Chemist, Bengal, throughout the year under review, and the Government Tobacco Farm (Burirhat), Rangpur, from May 1925.

Staff.—Mr. G. B. Pal, M.S.C., was Assistant Agricultural Chemist, Bengal, throughout the year. Assistants: Babu Indu Bhusan Chatterjee, L.AG., Babu Surendra Chandra Rakshit, B.SC., Babu Naba Kumar Nandy, M.SC. A new post of Assistant was sanctioned, and Babu Sukendu Bikas Sen, M.SC., was fitted into it. A new post of clerk has been sanctioned, and Babu Dinesh Ranjan Guha was appointed.

Rai Shaheb J. K. Biswas, Superintendent of Agriculture, and Babu Kalidas Roy, Superintendent of Agriculture, were placed under me, the former as a special officer for tobacco crop and the latter for sugarcane and date-palm demonstration work.

Babu Indra Mohan Das and Md. Abdul Karim, two retrenched demonstrators, were appointed as fieldmen in my section.

Babu Santi Prosad Sen, B.AG., District Agricultural Officer under training, was placed in my section in charge of field work.

Tour.—The Agricultural Chemist, Bengal, was on tour for 97 days, visiting Government agricultural farms at Rajshahi, Berhampore, Rangpur, Suri, Bankura etc., and sericultural nurseries in connection with manurial and other experiments.

Assistant Agricultural Chemist, Bengal, was on tour for 16 days, visiting date-palm demonstrations.

Superintendent of Agriculture, on special duty (tobacco), was on tour for 66 days, visiting the centres for tobacco improvement.

Superintendent of Agriculture, on special duty (sugarcane and date-palm), was on tour for 62 days, visiting the sugarcane demonstration centres and arranging for date-palm demonstration work at Jessore. A short account of the latter's work was appended.

The subordinate staff was on tour for 92 days mainly in connection with sugarcane analysis, betel-vine experiments and *gur*-boiling demonstrations.

Sugarcane.—This past season was on the whole fairly favourable for this crop, and a fair average yield was obtained, though some damage was done by heavy winds towards the end of the season.

C. O. 213 continues to do well, though there was a fair amount of disease in it as also in yellow *Tanna* this year.

Of the other varieties, none have the good qualities of these two canes, though many give a much better *gur*. The thin Coimbatore varieties have a tendency to lodge, and are attacked by jackals, whole some of the medium varieties went out with disease—in one case nearly 50 per cent.

Five new varieties have just been received from Pusa, while another three have been sent from Coimbatore. They will replace some of those, which have been found unable to stand up to Bengal conditions.

The new chewing canes grew well on the sewage farm. Cuttings of them have been sent to Ranaghat, Berhampore and Rajshahi. One is a particularly sweet cane, but it has a bad habit of lodging.

Twelve demonstrations of yellow *Tanna* sugarcane were laid down and started this year. They were begun in various parts of the province where sugarcane is usually grown, but where the departmental varieties had not yet been introduced properly to the cultivators. These demonstrations were chosen by the Superintendent of Agriculture on special duty in consultation with the local authorities.

As regards the supply of cuttings, over a lakh were sent out to meet different requisitions besides meeting the needs of the different farms. Both Dacca Central Farm and Berhampore have considerably increased their areas under cane, and to meet the demand for cuttings, this is essential. For results see Appendix I.

Date-palm sugar.—Arrangements were made early in the season for the carrying out of demonstrations in juice collecting and improved boiling methods in the Jessore district. Sanction, however, was not received till the middle of December, and so it was not till about the middle of January that the work was begun. The use of limed pots against smoked, the separation of lime and juice, improved and McGlashan furnace trials and the production of crude brown sugar were carried out. Many cultivators saw these experiments, and were much struck with the use of lime in pots and the McGlashan furnace. With this latter furnace, successful demonstrations were also given at Rangpur and Dinajpur in the making of crude brown sugar from sugarcane, and the raiyats in both places were very keenly interested.

The work at Dacca Farm of collecting juice and making *gur* from the farm plantation was continued. The main object here is to carry out experiments for the production and refinement of sugar both by local and centrifugal methods.

Tobacco.—The programme laid down by the tobacco committee was adhered to and several district farms had crops of both exotic and local varieties. The growth on most was poor despite careful instruction, but it must be remembered that this is a crop which the Farm Superintendents concerned had little experience of, while it is also one of the most difficult to grow well. The Superintendent of Agriculture for Tobacco was also taken away in October for six months at a time when he was most needed. However from the experience gained, next season should prove more successful. The seeds of five new varieties were obtained last season, but too late to do more than obtain a good seed supply for next season.

Departmental seed is still spreading, and with a decent crop on the district farms should soon spread more rapidly. In addition it is hoped to undertake some demonstration work with this crop in the coming season.

A second temporary curing shed has been erected at Dacca for the curing of cigar tobaccoes grown at Dacca and such farms where no curing shed is available. Further trials have been carried out with a fair amount of success in flue curing and firing. Samples will be sent to London when fully ready.

Cigar-making.—This industry has been carried on at the Government Tobacco Farm, Rangpur, for some years, but as it had somewhat deteriorated owing to various causes, the rollers, apparatus and tobaccoes were brought to Dacca. Here fumigation was not only possible but neccessary as the tobacco has become very infected with weevils. Also the grading and packing required more care and attention. With most varieties, a fairly high standard has been gained, and cigars to the total value of Rs. 752-5 have been sold in the last financial year.

Soil experiments.—The experiment with bone and lime on red laterite was continued to test certain points. It has now been definetly established that lime should not be applied in large, but in small frequent doses; otherwise potash, of which there is a fair quantity in the soil, is thrown out. It was also found that the effect of the lime was partially masked by an application of phosphate and *vice versa*.

Similar results were obtained during the carrying out of oil-cake experiments with more mature soil. Here again increase of lime meant throwing potash into an unavailable form.

This latter experiment was undertaken to find out the best time of application of oil-cake and also whether the nitrification would be affected by an application of lime. Tins were used in the open and crops were grown during the cold whether and again during the rains. In both cases the use of lime with cake had a very marked effect, the plants being much stronger and bigger than the others with cake only. With lime too the full effect was quicker. The experiment is now being laid on a field scale for a final test.

Residual effects were carried out in pot-culture in conjunction with the lime and bonemeal experiment (Appendix II).

A start was also made with the manurial requirements of paddy, and for this water cultures were made, to which were added acid digested silica. The first with glass jars was a failure owing to the continued formation of green slime. The second however with earthen galas was more successful. Lack of magnesium did not affect the growth, nor was absence of potash felt much. A very poor growth was obtained without phosphate and none at all without nitrate. This is being repeated.

Miscellaneous experiments.—Varietal green manure tests are still being carried on, but owing to the late harvesting of *aus* paddy, not much result was obtained. *Pukhi*, an early variety of *aus*, has been used this year.

Basu's plots have been heavily green-manured with *juar*, the latter being ploughed in and left over the cold weather for a test as to the economic effect of a heavy dose of organic matter and its duration in the soil.

The two and a half acres for the mulberry experiment at Berhampore are now under this crop, and the results of the first cropping obtained. Malda has also carried out this experiment (see Appendix III).

Manurial experiments have also been begun at Suri and Bankura farms.

Betel-vine disease.—A further considerable number of analyses have been done in this connection, for the results of which see Appendix IV. Field experiments at Rajabari were also conducted. It might be noted that the disease is most prevalent during the rains, and that it gradually decreases as the cold weather sets in. This would point more to a physical cause than a chemical. This aspect will be tested in the current year.

A number of routine analyses of soils and manures were carried out during the year under report.

In conclusion I would again point out the necessity for an extension to the present laboratory. This is essential if studies of the physical aspects of soils are to be carried out; also the bacteriological side is practically at a stand-still.

My assistants have carried out their duties in an efficient manner, and my clerk, Babu Govinda Prasad Sen, has worked very well during the year under report.

M. CARBERY,

Agricultural Chemist, Bengal.

Appendix I.

Result of experiment with sugarcane, 1925-26.

Diagonal experiment—Actual outturn.

Name of variety.	Area in acres.	Weight of cane.	Weight of juice.	Weight of *gur*.	Weight of *gur* per acre.
		Md. sr. ch	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.
Yellow *tanna* ..	0·33	156 30 0	83 10 0	13 30 0	41 10 0
C. O. 213 ..	0·33	180 35 0	118 0 0	23 10 0	69 30 0
Yellow *tanna* ..	0·33	176 25 0	90 20 0	14 35 0	44 25 0
C. O. 213 ..	0·33	193 10 0	127 30 0	25 5 0	75 15 0
Yellow *tanna* ..	0·05	18 35 0	10 5 0	1 22 8	31 10 0
C. O. 213 ..	0·05	16 10 0	10 20 0	2 3 8	41 30 0
Yellow *tanna* ..	0·05	23 30 0	12 25 0	1 38 0	39 0 0
C. O. 213 ..	0·05	17 10 0	11 5 0	2 7 3	43 23 12
Propagation area.					
Yellow *tanna* ..	1·00	565 15 0	297 30 0	51 7 9	51 7 9
C. O. 213 ..		Results not received.			

Result of sugarcane—Variety plots—1925-26.

Actual outturn.

C0. 210	0·05	21 15 0	14 10 0	2 13 8	46 30 0
C0. 210	0·05	21 10 0	15 15 0	2 18 2	49 2 8
C0. 213	0·05	29 1 0	14 12 0	2 20 3	50 3 12
C0. 213	0·05	30 3 0	15 25 0	2 22 0	51 0 0
C0. 221	0·05	26 30 0	14 7 0	2 28 4	56 25 0
C0. 221	0·05	30 7 0	14 30 0	2 27 14	53 37 8
C0. 239	0·05	21 10 0	15 3 0	2 19 4	49 25 0
C0. 239	0·05	18 30 0	12 20 0	2 25 10	52 32 8
C0. 240	0·05	16 10 0	10 20 0	1 31 4	35 25 0
C0. 240	0·05	17 20 0	11 35 0	2 0 10	40 12 8
C0. 241	0·01	4 5 0	3 15 0	0 12 2	30 12 8
C0. 241	0·05	35 5 0	22 0 0	4 14 0	87 0 0
C0. 242	0·02	8 35 0	5 20 0	0 33 8	41 35 0
C0. 242	0·02	14 5 0	8 30 0	1 21 11	30 33 12
C0. 243	0·05	32 15 0	21 15 0	3 22 1	71 1 4
C0. 243	0·05	33 10 0	21 30 0	3 24 13	72 16 4
C0. 243	0·05	25 20 0	19 10 0	3 7 13	63 28 2
C0. 244	0·05	12 20 0	7 30 0	1 12 15	26 18 12
C0. 244	0·02	8 20 0	5 35 0	0 36 8	45 25 0
C0. 244	0·05	13 2 0	8 10 0	1 17 8	28 30 0
Maxwell	0·05	30 2 8	12 25 0	2 4 0	42 0 0
Maxwell	0·05	33 15 0	15 7 0	2 26 9	55 31 4
D. 74	0·05	6 11 0	4 29 0	0 31 2	15 22 8
D. 74	0·05	7 10 0	5 10 0	0 38 0	19 0 0
Yellow *tanna* ..	0·05	34 11 0	21 21 0	1 33 8	36 30 0
Yellow *tanna* ..	0·05	23 8 8	18 15 0	1 36 0	38 0 0

Sugarcane—Manurial experiment—1925-26, Dacca.

Average yield of *gur* per acre.

Manure applied.	C,0. 213.	Yellow *tanna.*
	Md. sr. ch.	Md. sr. ch.
Chilean nitrate	67 12 8	51 20 0
Bone-meal	59 22 8	47 18 12
Castor-cake	50 37 0	49 3 12
Nitrolim	50 13 12	54 13 12
Ammonium sulphate ..	64 6 4	48 27 8

Ash analysis of sugarcane juice, 1924-25.

	CO. 210.	CO. 213.	CO. 221.	Yellow *tanna.*	D. 74	Maxwell	CO. 214 (flower cut off).	CO. 214 (flower not cut off).
Sand in ash	3·53	2·44	2·16	1·82	2·39	1·49	0·65	1·19
P_2O_5	21·35	30·18	21·96	23·55	29·69	24·41	2·53	18·72
K_2O	26·97	22·27	31·81	27·65	29·25	20·37	31·82	32·44
Mn_3O_4	1·96	1·74	1·09	1·95	1·55	3·24	1·63	1·64
CaO	15·12	12·03	11·51	17·72	14·41	14·24	13·49	14·16
MgO	17·98	13·07	19·12	20·66	16·29	12·56	19·72	20·46
Fe_2O_3	Trace	Trace	Trace	Trace	Trace	Trace	Trace	Trace
Al_2O_3								

Chinsurah Farm.

Manurial experiment—Actual weight.

No.	Manure.	Area.	Total cost.	Cane.	Juice.	Gur.	Value.		Sugarcane—Yellow *tanna.*		
							Gur at Rs. 9 per maund.	Cuttings at Rs. 8 per thousand.	Number of cuttings.	Profit.	Loss.
			Rs. A. P.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Rs. A. P.	Rs. A. P.		Rs. A. P.	Rs. A. P.
1	Superphosphate ..	0·10	66 0 0	80 0 0	47 5 0	8 38 12	80 11 6	7 15 0	916	22 0 6	..
2	Nitrolem ..	0·10	79 11 0	74 8 0	49 1 10	9 7 12	82 11 6	9 14 0	1,232	12 14 9	..
3	Castorcake ..	0·10	80 12 6	80 15 0	54 24 0	9 31 0	87 8 6	8 3 2	1,026	14 15 3	..
4	Pot. Nitrate ..	0·10	88 7 0	63 6 0	45 20 8	8 8 4	73 13 9	9 5 6	1,166	..	5 3 9
5	Ammon sulphate ..	0·10	77 14 0	81 1 0	53 34 0	9 18 12	85 3 6	9 8 6	1,188	19 13 3	..
	Total ..	0·50	392 12 6	..	..	45 24 8	415 0 9	44 4 3	..	69 11 9	5 3 9

NOTE.—The manure applied was in addition to the standard dressing of cowdung 200 maunds. The difference in total cost mainly due to the cost in *gur*-making due to bad weather condition prevailing at the time.

Yield per acre—(actual of 0·10 acre)

	Md. sr. ch.
Superphosphate	89 27 8
Nitrolim	91 37 8
Castorcake	97 30 0
Pot. Nitrate	82 2 8
Ammon sulphate	94 27 8

Results of Agricultural Chemist's manurial experiment on Yellow tanna sugarcane for the year 1925-26 (Rajshahi Farm).

Plot Nos.	Crop (sugarcane).	Name and quantity of manure per acre applied.	Area of plots in acre.	Weight of cane.	Weight of juice.	Weight of *gur*.	*Gur* per acre.
				Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.
C8 bla ..	Yellow *tanna* ..	100 mds. cowdung and 15 mds. castor cake per acre.	0·05	34 36 6	23 1 9	3 36 12	78 15 0
C8 blf ..	Ditto ..		0·05	35 23 12	23 34 10	4 3 12	81 35 0
C8 blb ..	Ditto ..	100 mds. cowdung and 4 mds. ammon sulphate per acre.	0·05	37 29 0	25 1 7	4 13 14	86 37 8
C8 blg ..	Ditto ..		0·05	33 2 8	23 1 2	3 29 0	74 20 0
C8 blc ..	Ditto ..	100 mds. cowdung and 4 mds. nitrolim per acre.	0·05	31 7 4	20 6 4	3 24 0	72 0 0
C8 blh ..	Ditto ..		0·05	30 9 0	19 37 13	3 20 6	70 7 8
C8 bld ..	Ditto ..	100 mds. cowdung and 6 mds. sodium nitrate per acre.	0·05	32 10 8	21 26 9	3 33 12	76 35 0
C8 bli ..	Ditto ..		0·05	30 5 8	20 8 1	3 10 4	65 5 0
C8 ble ..	Ditto ..	100 mds. cowdung and 5 mds. superphosphate per acre.	0·05	30 18 8	20 3 14	3 25 6	72 27 8
C8 blj ..	Ditto ..		0·05	26 35 8	19 11 12	3 10 14	65 17 8

Result of sugarcane tests, Berhampore Farm, for the year 1925-26.

Serial No.	Name of sugarcane.	Plot No.	Area.	Treatment.	Actual.			Per acre.		
					Weight of cane.	Weight of juice.	Weight of *gur*.	Weight of cane.	Weight of juice.	Weight of *gur*.
			B. c. ch.		Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.
1	CO. 213 ..	1/d	0 6 0	Non-nitrate ..	45 0 0	24 0 0	3 37 14	450 0 0	240 0 0	39 18 12
2	*Tanna* ..	2/d	0 6 0	Ditto ..	14 0 0	9 20 0	1 21 6	140 0 0	95 0 0	15 13 2
3	CO. 213 ..	3/d	0 6 0	Nitrate ..	40 0 0	24 0 0	4 0 0	400 0 0	240 0 0	40 0 0
4	*Tanna* ..	4/d	0 6 0	Ditto ..	31 0 0	20 0 0	3 12 0	310 0 0	200 0 0	33 0 0
5	CO. 213 ..	5/d	0 6 0	Non-nitrate ..	45 20 0	28 10 0	4 28 10	455 0 0	282 20 0	47 6 4
6	*Tanna* ..	6/d	0 6 0	Ditto ..	59 0 0	40 0 0	5 31 8	590 0 0	400 0 0	57 35 0
7	CO. 213 ..	7/d	0 6 0	Nitrate ..	36 0 0	21 0 0	3 24 7	360 0 0	210 0 0	36 4 6
8	*Tanna* ..	8/d	0 6 0	Ditto ..	45 0 0	27 0 0	4 24 14	450 0 0	270 0 0	46 8 12
9	CO. 213 ..	9/d	0 6 0	Non-nitrate ..	55 0 0	40 0 0	5 19 10	550 0 0	400 0 0	54 36 4
10	*Tanna* ..	10/d	0 6 0	Ditto ..	64 0 0	39 20 0	6 7 13	640 0 0	395 0 0	61 38 2
11	CO. 213 ..	11/d	0 6 0	Nitrate ..	40 20 0	24 20 0	4 4 8	405 0 0	245 0 0	41 5 0
12	*Tanna* ..	12/d	0 6 0	Ditto ..	27 20 0	17 0 0	2 29 14	275 0 0	170 0 0	27 18 12
13	*Tanna* ..	1/E	0 6 0	Nitrate ..	30 0 0	19 20 0	3 18 12	300 0 0	195 0 0	34 27 8
14	CO. 213 ..	2/E	0 6 0	Ditto ..	77 0 0	50 20 0	6 36 10	770 0 0	505 0 0	69 6 4
15	*Tanna* ..	3/E	0 6 0	Non-nitrate ..	25 0 0	15 0 0	2 17 12	250 0 0	150 0 0	24 17 8

16	C0. 213	..	4/E	0	6	0	Ditto	..	71	0	0	45	0	0	7	17	3	710	0	0	450	0	0	74	11	14
17	*Tanna*	..	5/E	0	6	0	Nitrate	..	25	0	0	15	0	0	2	19	14	250	0	0	150	0	0	24	38	12
18	C0. 213	..	6/E	0	6	0	Ditto	..	91	0	0	54	30	0	9	8	13	910	0	0	547	20	0	92	8	2
19	*Tanna*	..	7/E	0	6	0	Non-nitrate	..	61	0	0	39	20	0	5	34	1	610	0	0	395	0	0	58	20	10
20	C0. 213	..	8/E	0	6	0	Ditto	..	90	0	0	54	20	0	8	39	7	900	0	0	545	0	0	89	36	6
21	*Tanna*	..	9/E	0	6	0	Nitrate	..	51	0	0	33	0	0	4	22	4	510	0	0	330	0	0	45	22	8
22	C0. 213	..	10/E	0	6	0	Ditto	..	80	0	0	48	0	0	8	1	7	800	0	0	480	0	0	80	14	6
23	*Tanna*	..	11/E	0	6	0	Non-nitrate	..	26	20	0	18	0	0	2	32	9	265	0	0	180	0	0	28	5	10
24	C0. 213	..	12/E	0	6	0	Ditto	..	60	0	0	36	0	0	5	38	10	600	0	0	360	0	0	59	26	4

Chinsurah Farm.

Cold weather irrigation.

Serial No.	Area.	Total cost.	Actual weight.			Sugarcane—Yellow *tanna*.				
			Cane.	Juice.	*Gur*.	*Gur* at Rs. 9 per maund.	Number.	Cuttings at Rs. 8 per thousand	Profit.	Loss.
		Rs. A. P.	Md. sr.ch.	Md. sr. ch.	Md. sr. ch.	Rs. A. P.		Rs. A. P.	Rs. A. P.	Rs. A. P.
1	No irrigation .. 0·1	95 10 0	95 30 0	67 15 0	11 2 0	99 6 6	3,312	26 8 0	30 4 0	..
2	Two irrigations .. 0·1	90 12 6	101 10 0	68 13 0	10 34 4	97 11 0	4,172	32 4 0	40 2 6	..
3	Four ditto .. 0·1	102 10 6	98 32 0	65 33 0	10 28 12	96 7 6	3,244	26 0 0	19 13 0	..

Note.—Yield per acre on actual of 0·10 acres. Cost of irrigation in cold weather.

	Md. sr. ch.	Rs. A. P.
No irrigation	110 20 0	Nil
Two irrigations	108 22 8	3 10 0
Four ditto	107 7 8	7 12 0

Irrigation versus without irrigation.

1	With irrigation .. 0·10	98 5 0	77 31 0	54 28 0	9 10 8	83 5 6	1,374	11 0 0	Nil	3 15 3
2	Without ditto .. 0·10	95 5 0	84 5 0	58 5 0	9 29 0	87 8 6	1,430	11 6 9	2 10 3	..
	Total .. 0·20	194 10 0	..	..	18 39 8	170 14 0	..	22 6 9	2 10 3	3 15 3

Note.—The yield per acre on actual of 0·10 acre has been—

	Md. sr. ch.
No irrigation ..	97 10 0
Irrigation ..	92 25 0

Appendix II.

Testing residual effect of lime, bonemeal and cowdung.

Yield of Kataktara aus paddy per acre.

(Poultry area—Area of each plot 0·05 acre.)

Manures applied per acre. Lime—30 mds.; bone-meat—3 mds.; cowdung—300 mds., applied in 1921-22.

Tank.

3	2	1	6	5	4	9	8	7
Bone-meal and cowdung.	Bone-meal.	No manure.	Lime, bone-meal and cowdung.	Lime and bone-meal.	Lime.	Lime, bone-meal and (double dose) cowdung.	Lime, bone-meal and cowdung.	Lime and cowdung.
Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.
13 27 8	10 20 0	3 27 8	6 17 8	5 0 0	6 17 8	11 10 0	5 22 8	13 20 0

Kutcha road. Road.

S.←——→N.

Result of manurial experiment on paddy, Sunti low land, 1925-26.

Manure applied.	Area in acres.	Green weight.		Dry weight.		Outturn per acre.	
		Main crop.	Bye-product.	Main crop.	Bye-product.	Main crop.	Bye-product.
		Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.
Bone every 2nd year .. .. Lime every year	0·33	6 4 0	10 11 0	4 3 0	8 6 0	12 9 0	24 18 0
Bone every year .. .. Lime every year	0·33	5 30 0	8 0 0	3 36 0	7 32 0	11 28 0	23 16 0
No manure	0·33	2 28 0	6 3 0	1 32 0	3 24 0	5 16 0	10 32 0
Bone every 3rd year .. .. Lime every year	0·33	5 14 8	10 5 8	3 24 8	7 9 0	10 33 8	21 27 0
Lime every year	0·33	5 21 8	8 18 8	3 28 0	7 16 0	11 4 0	22 8 0
Rock phosphate every year ..	0·33	4 2 0	5 18 0	2 29 8	5 19 0	7 8 8	16 17 0
No manure	0·33	3 30 0	6 30 0	2 30 0	5 0 0	7 20 0	15 0 0
Bone every year	0·33	4 9 0	7 17 0	2 34 0	5 28 0	8 22 0	17 4 0
Bone every 3rd year	0·33	4 39 0	8 21 0	3 14 0	6 28 0	10 2 0	20 0 0
Lime every year .. .. Rock phosphate every year ..	0·33	3 0 8	7 33 0	2 0 0	6 0 0	6 0 0	18 0 0
Bone every 2nd year	0·33	3 35 8	6 4 8	2 24 0	5 8 0	7 32 0	15 24 0

Manurial experiment on winter paddy (Indrasail), 1925-26, Rajshahi Farm.

Plot No. 1/10th acre.	Name of manure.	Quantity applied.	Date of transplant.	Date of harvest.	Weight of green grain.	Weight of dry grain.	Weight of straw.	Number of bundles.	Weight of grain per acre.
					Md. sr. ch.	Md. sr. ch	Md. sr. ch.		Md. sr. ch.
21a	No manure ..	..	31st July 1925	13th December 1925	1 14 0	1 11 8	2 10 12	210	20 10 10
21b	Bonemeal every year	6¼ lbs.	Ditto ..	Ditto ..	1 16 8	1 14 4	2 0 8	230	27 0 5
22a	Ditto every 2nd year.	6¼ „	Ditto ..	Ditto ..	1 5 8	1 3 4	1 22 0	198	21 20 5
22b	Ditto every 3rd year.	6¼ „	Ditto ..	Ditto ..	1 10 0	1 7 10	1 36 0	235	23 20 12½
23a	No manure ..	..	Ditto ..	Ditto ..	1 6 0	1 3 8	1 25 0	177	21 20 10
23b	Rock phosphate every year.	5 lbs.	Ditto ..	Ditto ..	1 4 0	1 0 8	1 17 4	175	20 0 10
24a	Rock phosphate cowdung every year.	5 „ 7½ mds.	Ditto ..	Ditto ..	1 24 0	1 20 12	2 16 0	247	31 0 15
24b	No manure ..	..	Ditto ..	Ditto ..	1 15 12	1 13 8	2 0 12	211	26 20 10
25a	Rock phosphate and cowdung every year.	5 lbs. 7½ mds.	Ditto ..	Ditto ..	1 25 11	1 23 12	2 16 0	247	31 0 15
25b	Bonemeal every year	6¼ lbs.	Ditto ..	Ditto ..	1 19 0	1 16 0	1 29 0	227	28 0 0
26a	Ditto every 2nd year.	..	Ditto ..	Ditto ..	1 15 8	1 11 4	1 39 0	220	25 20 5
26b	Ditto every 3rd year.	6¼ lbs.	Ditto ..	Ditto ..	1 19 14	1 16 8	2 7 0	239	28 0 10
27a	No manure ..	..	Ditto ..	Ditto ..	1 10 0	1 7 8	1 36 8	212	23 20 10
27b	Rock phosphate every year.	5 lbs.	Ditto ..	Ditto ..	1 19 4	1 16 8	2 7 12	225	28 0 10
28a	Rock phosphate and cowdung every year.	5 „ 7½ mds.	Ditto ..	Ditto ..	1 35 12	1 33 0	3 0 0	246	36 20 0
28b	No manure ..	..	Ditto ..	Ditto ..	1 22 8	1 18 12	2 19 8	223	29 0 15

APPENDIX III.

Berhampore Central Nursery.

Statement showing the weights of leaves harvested from the Experimental Block during the year 1925-26.

Area of each plot 0·05 acre.

Date of harvesting.	Section I.					Section II.				
	Plot No. 1— Cowdung at 10 mds. per acre.	Plot No. 2— Ammon sulph. 8 srs., H. ash 2 lbs., super-phos. 2 lbs.	Plot No. 3— Castor cake 32 srs.	Plot No. 4— Silt 2 mds.	Plot No. 5— Guano. 24 srs. per annum.	Plot No. 1— Cowdung 10 mds.	Plot No. 2— Ammon sulph. 8 srs., H. ash. 2 lbs., super-phos. 2 lbs.	Plot No. 3— Castor cake 32 srs.	Plot No. 4— Silt 2 mds.	Plot No. 5— Guano 24 srs.
	Md. sr.	Md. sr.	Md. sr.	Md. sr.	Md. sr.	Md. sr.	Md. sr.	Md. sr.	Md. sr.	Md. sr.
18-10-25	2 22	3 15	3 32	1 35	3 2	1 30	2 35	2 35	2 34	2 15
7-7-25										
8-7-25										
9-7-25	6 15	8 20	11 0	8 20	11 25	9 0	13 12	10 25	9 30	8 0
10-7-25										
7-1-26	0 35	0 36	1 0	0 30	0 30	0 30	0 31	1 0	1 5	1 0
Total ..	9 32	12 31	15 32	11 5	15 17	11 20	16 38	13 20	13 29	11 15

NOTE.—Plots 1, 2 and part 3 of section 1 harvested on 7th July 1925. Plots 4, 5 and part of 3 of section 1 harvested on 8th July 1925. and plots 3, 4 and 5 of section 11 on 9th July 1925 and plots 1 and 2 of section 11 on 10th July 1925.

Statement showing the outturn of mulberry leaves obtained from the experimental plot No. 32 A for the year 1925-26 at Amriti Central Nursery.

Name of bund.	Area.	A-1— Cowdung.	A/2— Super-phos-phate Ammon. Sulphate. H. ash.	A/3— Castor.	A/4— Cowdung.	A/5— Guano.	B/1— Castor.	B/2— Cowdung.	B/3— Guano.	B/4— Cowdung.	B/5—
	C.	Md. sr.	Md. sr. ch.	Md. sr.	Md. sr. ch.	Md. sr.	Md. sr.	Md. sr.	Md. sr.	Md. sr.	Md. sr.
Chait-Baisakhi ..	3	0 19	0 18 8	0 21	0 19 8	0 19	0 21	0 22	0 19	0 20	0 21
Sravoni ..	3	1 30	0 24 0	0 32	2 5 0	0 22	0 29	2 0	0 21	1 25	0 25
Maghi ..	3	1 9	1 7 0	1 0	1 14 0	1 8	1 9	1 5	1 7	1 25	0 12
Total ..		3 18	2 9 8	2 13	3 38 8	2 9	2 19	3 27	2 7	3 30	2 18

Appendix IV.

Betel-vine—Boroj soil.

	Soil from affected boroj (Munshiganj).		Soil from non-affected boroj (Munshiganj).		Soil from affected boroj (Rajabari).		Soil from deserted boroj (Rajabari).	
	Surface soil.	Sub-soil.	Surface soil.	Sub-soil.	Surface soil.	Sub-soil.	Surface soil.	Sub-soil.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Moisture	1·27	1·336	1·79	2·29	....	....	....	....
Organic matter	2·693	3·011	4·389	3·993	3·295	2·926	2·892	2·934
Silica	81·49	80·633	75·207	75·727	78·433	79·783	79·74	80·335
Nitrogen	0·0658	0·0546	0·084	0·077	0·0546	0·049	0·049	0·049
Fe_2O_3	4·314	4·732	5·106	5·506	4·7925	4·4975	4·5475	4·59
Al_2O_3	6·738	7·676	10·681	10·502	8·9064	8·3179	7·4714	7·9852
Mn_3O_4	0·0725	0·0775	0·09	0·035	0·08	0·12	0·085	0·070
Ca O	0·785	0·7825	0·865	0·8475	0·95	0·97	1·60	1·295
Mg O	1·106	1·3289	1·65647	1·03009	1·7796	1·6999	1·756	1·4646
P_2O_5	0·1081	0·1021	0·10288	0·1021	0·0811	0·0796	0·0811	0·0848
K_2O	0·9707	1·1577	1·4756	1·258	1·2316	1·0625	1·0574	0·9981

N.B.—Calculations are in moisture free basis.

Result of betel-vine ash analysis.

	Non-affected vine from Jaradil (Munshiganj).	Non-affected leaf from Jaradil (Munshiganj).	Affected vine from Belua (Munshiganj).	Affected leaf from Belua (Munshiganj).	Affected vine from Bharat (Rajabari).	Affected leaf from Bharat (Rajabari).	Dead and dried vine from Bharat (Rajabari).	Dead and dried leaf from Bharat (Rajabari).
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Moisture	3·366	6·98	3·6	6·52	8·012	8·275	4·40	5·20
Loss or ignition	92·9408	88·2348	92·1327	89·8031	....	....	....	....
Sand	1·155	1·139	1·224	0·95	....	....	....	....
Ash	5·906	10·625	6·66	9·247	....	....	....	....
K_2O	21·109	3·582	2·356	3·026	2·7336	4·095	1·887	2·006
P_2O_5	0·379	0·562	0·486	0·533	0·4115	0·520	0·4175	0·4836
CaO	1·2417	1·892	1·1617	2·225	1·100	2·45	1·400	2·54
MgO	0·9741	2·133	....	1·8669	0·836	1·5789	0·9414	1·3035
Mn_3O_4	0·4139	0·387	0·4564	0·3851	0·100	0·190	0·100	0·0200
Na_2O	0·6276	0·8559	0·5585	0·3205	....	....	....	....
Al_2O_3	Trace	Trace	Trace	Trace	Trace	Trace	Trace	Trace
Fe_2O_3								
Nitrogen	1·772 (moisture free sample)	3·195 (moisture free sample)	1·573 (moisture free sample)	2·281 (moisture free sample)	0·658 (moisture free sample)	1·454 (moisture free sample)	1·68 (moisture free sample)	1·806 (moisture free sample)

N.B.—Calculation are on dry weight of the sample.

	Affected vine, Rajabari (near Rajabari school).	Affected leaf, Rajabari (near Rajabari school).	Affected vine, Naria, Faridpur.	Affected leaf, Naria, Faridpur.	Apparently non-affected vine, Rajabari.	Apparently non-affected leaf, Rajabari.	Affected vine, Rajabari.	Affected leaf, Rajabari.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Moisture	4·600	5·600	3·640	3·460	6·043	7·210	5·976	6·096
K_2O	2·397	3·893	3·257	3·556	2·271	3·441	3·0116	4·0116
P_2O_5	0·5106	0·5797	0·5437	0·779	0·251	0·389	0·251	0·387
CaO	0·900	3·040	1·40	1·80	1·184	3·244	1·532	1·440
MgO	0·778	2·064	0·601	1·3252	0·677	2·078	....	1·616
Mn_3O_4	0·120	0·120	0·05	0·02	0·149	0·187	0·174	0·169
Nitrogen	0·2287 (fresh sample) 0·9789 (calculated on dry basis)	0·5367 (fresh sample) 2·382 (calculated on dry basis)	1·862 (dry basis)	2·786 (dry basis)	....	....	....	....
Fe_2O_3	Trace	Trace	Trace	Trace	Trace	Trace	Trace	Trace
Al_2O_3								

N.B.—Calculations are on dry weight of the sample.

	Diseased vine (from Fatulla).	Diseased leaf (Fatulla).	Non-affected vine (Burdwan).	Non-affected leaves (Burdwan).	Diseased vine (Khulna).	Diseased leaves (Khulna).	Non-affected vine (Khulna).	Non-affected leaves (Khulna).
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Moisture	9·921	10·75	6·328	6·523	5·901	10·051	6·229	7·953
K_2O_5	3·284	5·217	4·567	4·562	1·1084	3·094	1·924	3·611
P_2O_5	0·375	0·597	0·447	0·808	0·5827	0·763	0·5497	0·838
Mn_3O_4	0·103	0·083	0·120	0·192	0·040	0·040	0·060	0·040
CaO	1·177	1·832	1·58	3·268	1·640	3·380	1·260	3·00
MgO	0·628	1·492	0·597	1·378	0·572	1·513	0·406	1·339
Al_2O_3	Trace	Trace	Trace	Trace	Trace	Trace	Trace	Trace
FO_2O_3								
Nitrogen	....	....	....	....	1·350	3·570	1·226	2·388

N.B.—Calculations are on dry weight of the sample.

	Diseased vine, Faridpur.	Diseased leaf, Faridpur.	Diseased vine. Madaripur.	Diseased leaf Madaripur.	Tela variety, Madaripur.	Disease free, Rajshahi.	Disease free leaves, Rajshahi.	Diseaseed vine, Rajshahi.	Deshi pan, Murshidabad.	Chachi pan, Murshidabad.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Perc ent.	Per cent.
Ash	9·120	11·62	10·492	13·636	16·900	9·516	12·880	7·270	..	..
K_2O	3·87	4·828	4·714	4·529	8·446	4·972	4·898	3·062	5·0769	4·6585
P_2O_5	0·541	0·958	0·692	0·658	0·754	0·687	0·828	0·643	0·6492	0·6836
Mn_3O_4	0·060	0·060	Trace	Trace	0·149	0·134	0·451	0·130	0·0471	0·0466
CaO	1·60	2·260	1·274	3·84	3·463	1·212	3·479	1·566	3·3008	2·7776
MgO	0·485	0·876	0·594	1·549	0·967	0·263	1·428	0·378	1·1837	1·3437
Fe_2O_3	Trace	Trace	Trace	Trace	Trace	Trace	Trace	Trace	Trace	Trace
Al_2O_3										
Cl_2	..	..	..	..	0·779	0·49	0·696	0·523	..	..

N.B.—Calculations are on dry weight of the sample.

	Diseased leaves (Hooghly).	Apparently disease free vine (Hooghly).	Apparently disease free leaves (Hooghly).	Vine (Nadia).	Leaves (Nadia).	Disease free vine (Murshidabad)	Disease free leaves (Murshidabad).
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
K_2O	5·456	3·919	6·606	4·171	5·277	4·774	6·022
P_2O_5	0·597	0·400	0·710	0·570	0·667	0·449	0·605
Mn_3O_4	0·170	0·103	0·280	0·324	0·196	0·165	0·140
CaO	1·258	0·992	1·482	0·926	2·641	1·253	3·220
MgO	1·120	0·441	1·073	0·955	2·198	0·153	1·020
Cl_2	0·991	0·716	1·533	1·431	1·389	0·471	0·843
Al_2O_3	Trace	Trace	Trace	Trace	Trace	Trace	Trace
Fe_2O_3							

N.B.—Calculations are on dry weight of the sample.

APPENDIX A.

Date Palm Work in Kotchandpur.

In the beginning of May 1925 I was ordered to proceed to Kotchandpur in Jessore and select a site and arrange for a lease of a date garden for conducting improved methods of collection of date juice, manufacturing of *gur* and other experiments in connection with date trees on the lines indicated by the Agricultural Chemist to the Government of Bengal.

I proceeded to Kotchandpur and enquired into the present condition of date *gur* and date sugar. I learnt that the merchants of Kotchandpur sustained a very big loss, amounting to three and half lakh of rupees, in the date sugar business in 1924-25, on account of the import of cheap sugar from foreign markets. The producers of raw sugar at Kotchandpur could not dispose of their produce in the Calcutta markets as Messrs. Turner, Morrison & Co. and owners of other refineries closed their business on account of cheap foreign sugar. The Tarpur Sugar Works, which produced refined sugar from date *gur*, also closed their business on account of the same reason. But from enquiry I came to learn that on the whole the raiyats did not lose much in respect of the price of their date *gur*, for they had been able to dispose of their *gur* as usual. The *beparis* from East Bengal purchased all their products at an even higher price. So from the raiyats' point of view it is desirable that demonstration should be conducted in the collection of juice and preservation of date juice and manufacture of *gur* on the lines indicated by the Agricultural Chemist. Up to date the date palm work was confined to the laboratory only and now the time has come that demonstration and propaganda work should be undertaken to improve the situation if possible. At present the fuel question is also a factor, and improved furnaces should be designed which can be fed with coal and demonstrated in the midst of the raiyats. The idea of solving the fuel question is not a new problem. The intelligent raiyats in some places grow *rahar* for fuel, and they are also thinking of introducing coal for boiling down the juice.

With the above idea in view as pointed out by the Agricultural Chemist, I selected a date grove consisting of 270 trees on the Kotchandpur-Kaliganj road.

As soon as the site was inspected and approved by the Agricultural Chemist, it was decided to commence work from the beginning of the cold weather. The Agricultural Chemist prepared an estimate of cost and submitted the same for Government sanction. The sanction came very late in the season, *i.e.*, by the end of December, and the idea of conducting the experiment and demonstration was given up. But on after consideration, the Agricultural Chemist ordered me to proceed to Kotchandpur and commence the demonstration work of collecting juice in limed pots and boil the same in iron pans on an improved furnace. He also gave me several other instructions in order to impress the benefit of improved methods of collection and boiling.

I arrived at Kotchandpur on the 13th January (morning) and made arrangements for commencing our work. In the beginning it was decided that we should pay 8 annas per tree for the whole season, commencing from November to the middle of March, but as two and half months have already passed it was settled that the owner should get Rs. 90 for 270 trees in the grove. The full amount was paid in the presence of the Agents of Mr. McLeod and I occupied the garden. On the 14th I engaged three men, *i.e.*, one tapper and three bearers of the tapper, for our work. From the 15th January we commenced. From the 15th to 27th I supervised the tapping, made arrangements for fuel, built one temporary shed, and constructed a ring well for the supply of water.

The work in Kotchandpur was divided into three parts:—

(1) Collection of juice in limed pots.

(2) Boiling of juice in iron pans on improved furnaces.

(3) Conversion of juice into sugar like *gur* as practised in Kishoreganj.

(1) The total number of trees were divided into five groups or "*palas*", each containing 50 to 54 trees. In the afternoon the *gachi* or tapper used to cut the trees and suspend the earthenware pots under the spout for the collection of juice. In this manner each group of trees was cut every fifth day and the juice was collected for two successive nights and days. The juice collected in the first night is called "*jiran*" and on the second night is called "*dokat*", while those collected in the day time are called "*ola*".

Every day (afternoon), with the help of his bearers, the tapper had to cut 50 to 54 trees and suspend some 100 to 108 earthen pots both for *jiran* and *dokat* juice. The pots were removed in the early morning from 7 A.M. to 8 A.M. and boiled down into *gur*. Just after removing the pots, *i.e.* at 8 A.M. the bearers had to suspend some 50 to 54 pots on the newly cut trees for the collection of *ola* juice. These *ola* juice pots were removed in the afternoon before suspending pots for the collection of *dokat* juice. From 15th to 18th January the juice was collected in the raiyats' way and boiled down into *gur*. On the 19th January, when everything was got ready for our work, trees were marked and half the number of trees and pots of each day's group or *pala* was treated according to the instruction of the Agricultural Chemist, and half the number was treated according to the ordinary method of the raiyats, and the juice was boiled down separately into *gur*.

The two different methods of collection were:—

(1) Every day at 9 A.M. or 10 A.M. the earthen pots for collection of juice were washed with hot water as soon as they were emptied and smeared inside with lime made up by mixing lime and water. The pots were kept downwards in this condition up to 2 P.M. or 3 P.M. when they were suspended to the trees, the cut surfaces of which (except *jiran* cut trees) were washed with a piece of cotton cloth soaked in water.

(2) Every day at 9 A.M. or 10 A.M. the earthen pots for the collection of juice were washed with water as soon as they were emptied and then smoked. The smoking was done by putting a number of pots mouth downwards in a slanting way for a few minutes over some rubbish such as leaves of date trees or other leaves or straw and then firing the rubbish. The interior of the pots were thus smoked. This is the common method practised by the raiyats throughout the date palm area in Jessore.

Every morning the juice of both the series was boiled down into *gur* separately and stored in separate *kalsis* for examination.

From the 19th to the 25th of January there was very little difference in the consistency of the *gur* of both the series which was examined every morning. But great difficulty was felt in boiling the juice of the limed pots as it frothed and bubbled so violently in the earthen pans which are commonly used for boiling the juice, that we had to remove a certain quantity of juice from each pan every now and then. In this manner it took a longer time to boil the limed juice into *gur*. The colour of the *gur* from the lime juice was also inferior to that of the smoked one. On account of these difficulties, liming was stopped for the time being as it was considered that there might have been some defect in liming the pots. The matter was reported to the Agricultural Chemist who sent his Assistant to rectify the defect. The Assistant Chemist came to Kotchandpur and tried to separate the lime from the juice by several means. At last he succeeded in doing so by boiling the juice for some time and then removing the pans from the fire place. The boiled juice was then allowed to precipitate for quarter of an hour and then poured out gently into another set of boiling pans. When the juice was thus poured out the total quantity of lime was found underneath mixed up with a certain quantity of juice. The clarified juice was then boiled in the usual way and converted into *gur*. The quality of *gur* obtained in this manner was as good as "*nalen*" *gur*, *i.e.*, what is obtained in the beginning of the season, and much appreciated by the consumers. The collection and boiling was continued for four days in the presence of the Assistant Chemist, and it was seen that this method of manufacturing *gur* was superior to the raiyats' existing method of collection and manufacture. After this the washing and smoking of the pots were given up and liming was followed all through. The date grove being very close to the main road, the liming and boiling of juice were closely observed by several raiyats attending the *hât* days and railway station. At first the raiyats hesitated to acknowledge the superiority of this liming method, as they complained of its complications in settling the juice after boiling for an hour, but when they found a superior quality of *gur* was being obtained even during the latter part of the season and on cloudy and misty days they acknowledged its superiority and promised to adopt the same in the next season. The tapper and bearers engaged in our grove always informed us that they would adopt the method of liming in the next season and manufacture superior *gur* in their own garden. The raiyats visiting the demonstration acknowledged that during the latter part of the season the quality of date *gur* generally deteriorates and

they get a very low price in the markets, but if they could follow the method of liming and boiling as demonstrated, they would be able to produce a very good *gur* throughout the season. By the end of the season, for the sake of demonstration sometimes, the juice was collected in unlimed pots and an inferior quality of *gur* was obtained which fetched Rs. 3 per maund, while the *gur* out of the limed juice was sold at Rs. 5 per maund.

(2) **Boiling of juice on improved furnace and in iron pans.**—In the beginning one iron-grated furnace fitted with a chimney was constructed to fit the raiyats' earthen pans for boiling juice. The idea was to see if there be any saving of fuel or time, with very little deviation from the raiyats' existing system. Several trials were given with this furnace even with slight modifications in its structure, but there was neither saving of fuel nor time, and it was found to be inferior to the existing country furnaces.

One McGlashan furnace was built and one shallow rectangular pan was obtained from Messrs. Renwick & Co., Kusthia. This furnace was found to be a very useful one and there was much saving of time, and the quantity of fuel required being almost the same or sometimes even less than that consumed in the country furnaces. The accompanying table will show the quantity of fuel and length of time required for the McGlashan furnace and country furnace. From the table it will be seen that there is not only a saving of time in boiling juice in the shallow rectangular pan but also the ratio of *gur* to juice is greater. The surrounding raiyats took much interest in the McGlashan furnace and the shallow rectangular pan. They came every day to the date grove to see the method of liming the pots, settling the lime juice and manufacture of *gur* in the McGlashan furnace. The demonstrator and his tappers had to answer innumerable questions and queries of the local raiyats visiting the garden daily. Some of the raiyats wanted us to leave the shallow rectangular pan there, as they were very much pleased with the working of the pan and the furnace.

The cultivators using four boiling pans and dealing with 3 to 4 maunds of juice daily can safely have one shallow rectangular pan and adopt the McGlashan furnace instead of their present furnace.

It is desirable that experiments should be conducted at Dacca or Jessore Farm with different furnaces and pans to arrive at a definite conclusion. If coal is to be used in boiling date palm juice where there is fuel scarcity, experiments should be conducted in that direction also.

(3) **Conversion of date juice into sugar like gur in course of boiling.**—Kotchandpur being the centre of the date sugar industry, it was intended to give some trials with date juice and convert the same into *dolo* sugar in the course of boiling as practised by the raiyats of Kishoreganj with their sugarcane juice.

If the date juice can be converted into *dolo* sugar or sugarlike *gur* in course of boiling the juice, it would be of great advantage to the local raiyats who would be able to dispose of their produces at a very high price. With a view to this end one *gur* boiler from Kishoreganj was taken to Kotchandpur and several trials were given to convert the juice into sugarlike *gur* after the Kishoreganj method, but the date juice is not so rich in sugar as the sugarcane juice and we failed in our attempt to convert the date juice into *dolo* sugar. It is desirable that such experiments should be conducted in Dacca or Jessore Farm, where date juice is available.

Though we failed in our attempts with date juice we were successful with sugarcane juice and the raiyats as well as the sugar merchants like Messrs. McLeod and Modokas of Kotchandpur were astonished with the result. The Agricultural Chemist visited the place on the 3rd March and we reported to him our failure of converting the date juice into sugarlike *gur*. On hearing this, the Agricultural Chemist wanted to have an idea of the surrounding place and he asked me to accompany him. Sugarcane-crushing and *gur*-boiling was then going on close by our date grove. The Agricultural Chemist proceeded there and enquired of many things of the raiyats. At last he requested the raiyats to supply us with a certain quantity of sugarcane juice and watch the boiling of the juice by the Kishoreganj man. The raiyats agreed to the proposal, and we sent the Kishoreganj man to get a certain quantity of sugarcane juice and boil the same in the presence of the local raiyats and convert it into sugarlike *gur*.

The Kishoreganj man did the same in the presence of the local raiyats and they were so much satisfied with the products that they proceeded to the Agricultural Chemist to request him to permit the Kishoreganj man to stay at Kotchandpur few days more and teach them the method of boiling. But as the

Kishoreganj man had to go to Dinajpur he could not remain there longer. I had a mind to give a demonstration with the McGlashan furnace and shallow rectangular pan in the midst of the raiyats growing sugarcane in the Jhenidah subdivision, but I could not do so as it was very late in the season.

Receipts and expenditure.—From 15th January to the 11th March we collected 141 maunds of juice in 53 days of working and the total amount of juice was converted into 21 maunds and 17 seers of *gur*. The sale proceeds of *gur*, including superior and inferior qualities, were Rs. 92-3-6 only. An amount of Rs. 44 was received by the sale of the temporary shed, ropes, buckets and the rest of the fuels, etc.

We incurred an expenditure of Rs. 574-10-9 only under the following heads: implements, Rs. 50-10-9; one temporary shed, Rs. 109-1-6, one well, Rs. 30; miscellaneous including hire of garden, pan, etc., Rs. 136-1-9; wages of labourers including the wages of wood splitters, Rs. 234-3-3; and the travelling of the Kishoreganj man, Rs. 14-9-6.

Suggestions.—In order to introduce this method of collection of juice and boiling in the date palm areas in Jessore, it is necessary that two or three demonstrators should be trained thoroughly in Dacca Farm, specially in the construction of the McGlashan furnace and its working with the shallow rectangular pan and limed juice and send them out in the district to give successful demonstrations of the collection of juice and its boiling on improved furnaces.

KALIDAS ROY,

Superintendent of Agriculture,
(on special duty).

Table I.

Date.	Furnace.	Weight of juice.	Weight of *gur*.	Ratio of juice to *gur*.	Weight of fuel.	Fuel per maund of juice.	Time.	Time per maund of juice.	Remarks.
		Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	Md. sr. ch.	Hr. M.	Hr. M.	
16-2-26	Country (earthen pans) ..	1 35 0	0 9 3	8·16	1 22 0	0 33 1	2 30	1 20	After four days' experiment it was found out that there was not only saving of time but also of fuel and the ratio of *gur* to juice was found greater in shallow iron pans than in the raiyats' earthen pan. Henceforth we discontinued boiling juice in earthen pans on a country furnace.
17-2-26	McGlashan (shallow rectangular iron pan).	3 1 0	0 15 15	7·60	2 11 0	0 30 1	2 15	0 45	
18-2-26	Country (earthen pans) ..	1 33 0	0 11 2	6·56	1 16 8	0 30 11	2 23	1 19	
19-2-26	McGlashan (shallow rectangular pan).	1 28 0	0 11 0	6·18	1 10 0	0 29 6	1 18	0 40	

APPENDIX V.

Annual Report of the Deputy Director of Agriculture, Eastern Circle, for the year 1925-26.

Mr. Smith made over charge to me on the 27th November, since when I have held the charge of the circle.

The season under review was an uncertain one. In some places jute and sugarcane were badly affected by abnormal heavy rains in the early part of the season. Again in some districts the rainfall was short just after transplantation of *aman* paddy. The weather, however, took a favourable turn in the latter part of the season, and thereby the winter paddy was much benefited.

Untimely and unusual rains in the latter part of the year considerably damaged *rabi* crops.

Staff.—The staff of the Dacca Central Farm remained the same during the year. The district comprised eight District Agricultural Officers and 27 demonstrators, including three demonstrators under training in the Agricultural School, Dacca Farm.

The district of Noakhali having no Agricultural Officer of its own, Maulvi Zainal Haque, District Agricultural Officer of Chittagong, was in charge for the time being. Babu Prafulla Kumar Das, Agricultural Officer of Mymensingh Sadar, was transferred to the Northern Circle, and Babu Kshitish Chandra Guha took over charge from him in the beginning of September 1925.

Babu Surendra Nath Sen, Agricultural Officer of Barisal, was on leave for six and a half months. Babus Gomoj Behari Bose and Atul Chandra Bose officiated during his absence.

A permanent District Agricultural Officer has been sanctioned for the Chittagong Hill Tracts, and an agricultural graduate of the Darjeeling district has been appointed. He is now under training in the Dacca Farm. He will join his duties at Rangamati as soon as the construction of the farm there is completed.

A temporary additional District Agricultural Officer was entertained in the Dacca district for organization of paddy seed farms.

It is a pleasure to note here that the good services of Babu Debendra Nath Mitra, District Agricultural Officer of Faridpur, have been rewarded with the title of Rai Saheb.

Tours.—Mr. Smith spent 134 days on tour and I spent 57 days. Agricultural Officers still vary in their energy and capacity, and promotion must go to those who produce satisfactory results.

Farms.—The following 13 farms were under our management in this circle during the year.

Dacca Farm.—This is the central station for research. The details of the experiments with results will be found in the reports of the expert officers.

Seed of improved races receives its preliminary multiplication at Dacca farm was sent out to other Government farms and to the public.

The area acquired for the proposed Agricultural Institute was also utilised in growing suitable crops of the staff of this central station.

In a word Dacca Farm is famous for all departmental activities on a small scale. They include—

(*i*) All the important crops, namely, paddy, jute, sugarcane, tobacco, cotton, potatoes, pulses, mustard, English vegetables, etc.—(*a*) varieties of fodder crops, (*b*) fruit culture, (*c*) mulberry cultivation and rearing of silk worms.

(*ii*) Methods of cultivation by improved implements and machinery and by application of various manures.

(*iii*) The dairy section is gradually developing, the Tharparkar herd of Rangpur Cattle Farm have been removed to this farm. An Ayrshire bull has been brought from Scotland at a cost of Rs. 1,901-9, including freightage, with the object of raising a cross-bred herd of heavy milkers.

(*iv*) A big area has been enclosed during the year for poultry farming.

(*v*) Manufacturing of cheroot is also an interesting item of our work on this farm.

District farms.—Districts of Mymensingh, Faridpur, Barisal and Comilla have got their own farms at district head-quarters. With the establishment of farms at Chittagong and Noakhali, the scheme will be complete in this circle. The nature of work in all these farms is more or less the same. All the important crops suitable for the district are grown, and demonstrations with recommended varieties of crops, manures and implements are the main feature of our district farms. Seeds of improved strain grown on these farms are meant for the supply among the interested cultivators of the district; but some District Agricultural Officers do not get interested themselves sufficiently in district work, which is the main object for which they are employed. A good breeding bull will be kept in each district farm to serve local cows. During the year under report, one such bull was sent to the Faridpur Farm—others will be sent at an early date to Mymensingh, Barisal, and Comilla farms. On the whole, these bulls have not so far been appreciated by the public. This may be due to lethargy of Agricultural Officers as there are exceptions, *e.g.*, in Faridpur.

A portion of each farm was set apart for cultivation under economic basis, and the results are available for inspection.

Farms worked by labourers paid in kind.—There are three such farms in this circle. They are located on the lands acquired for the proposed district head-quarters at Kishoreganj and Jamalpur, also at the subdivisional headquarters town at Dhanbari.

The first established most important farm of this kind is the Kishoreganj Farm. It is double the size of the ordinary district farms. Though the weather was not favourable, the results obtained in the year still shows that it is a profitable concern; not only from the financial point of view, but on a means of rapidly introducing agricultural improvements into the neighbourhood like Kishoreganj from economic point of view; the Jamalpur and Dhanbari farms have also proved that they are paying concerns, and doubtless they are equally effective from the point of view of demonstration.

Wards' Estates farms.—Of the four farms maintained by the Court of Wards, the Baratia (Tangail) Farm was taken over by Sontosh Six Annas Estate, which was released in the latter part of 1925. The manager of the estate asked my opinion regarding its abolition; the importance of the farm with regard to its beneficial work among the tenants and its economic profit to the proprietor was explained to him on the spot. When convinced, he advocated its maintenance to the zamindar. I am glad to report that the farm is being still managed under our guidance and supervision. During the year the margin of profit was very satisfactory, specially due to the unusual high price of jute.

An excellent breeding bull purchased from the Rangpur Cattle Farm is being maintained on this farm for public benefit. Its good service is highly appreciated by the neighbouring people.

Brahmanbaria Ward's Estate Farm.—This is a small farm of 11 bighas maintained by the Sarail Court of Ward's Estate. Like Baratia the farm serves a double purpose. It is a source of revenue in addition to performing its function as a propaganda centre among the raiyats. The farm is close to the cutcherry of the estate at Branhmanbaria, and raiyats coming to the cutcherry are familiar with the working of the farm. Here too there is a breeding bull for public srevice. During the year the bull gave services to 34 cows. The manager of the estate takes special interest in agricultural affairs.

Gayhatta Ward's Estate Farm.—This is a small farm at Gayhatta in the Tangail subdivision. The farm is suitable for jute and paddy cultivation only. The entire area of the farm (3·68 acres) was sown with *Kakya Bombai* Jute, and the outturn obtained was 78 maunds of fibre. Owing to the high price of jute, this small farm was also paying.

In the rainy season the farm goes under water 3 to 4 feet deep; again in autumn and winter the scarcity of moisture is so badly felt that *rabi* cultivation is difficult.

The Joydebpur Ward's Estate farms.—This is a small farm of 10 bighas maintained by the Joydebpur Court of Ward's Estate. It is close to the railway station and Raj cutcherry. It serves the purpose of a seed farm where jute and paddy seeds are raised and disposed of among the neighbouring villagers. The area, at present small, is being expanded.

At Joydebpur farm a Government Demonstrator looks after the farm work in addition to his work in the neighbouring villages. The same is true of the other

three farms belonging to the Court of Wards, but the demonstrator is maintained by the respective wards estates.

Durgapur Farm.—This is a small farm attached to the Durgapur High English School in the district of Chittagong. Here school boys work under the direction of an agricultural teacher.

As in previous years our recommended varieties of crops were grown here. The Head Master of the school reports that *Kataktara*, *Surjamukhi aus* paddy and *tanna* cane gave satisfactory results; the local cultivators appreciated this variety of cane, and they imported *tanna* cuttings from Kishoreganj; potato cultivation has also been introduced and there is considerable probability of its rapid spread if a suitable seed supply can be organized.

The Head Master also reports that gram, *sonamung* and cowpeas are rare crops in the district; but that demonstration for several years on the school farm shows that these crops can regularly be grown in the district as field crops.

Besides the above varieties of vegetables, including cabbages, were successfully grown.

In the year under review the following manures were tried on the farm:—

(1) Cowdung and wood ashes as general manure.
(2) Oilcake on vegetable crop.
(3) Fishmeal and nitrate of soda on sugarcane.
(4) *Dhaincha* as green manure.

The table below will show the staff engaged in district and farm work:—

Dacca District Farm—

1 Superintendent of Agriculture.
1 Farm Superintendent.
4 Overseers.
2 Fieldmen.
1 Clerk.

District work—

2 District Agricultural Officers.
8 Demonstrators.

District work and farm combined.

Mymensingh district—

3 District Agricultural Officers.
6 Demonstrators.

Faridpur district—

1 District Agricultural Officer.
4 Demonstrators.

Barisal district—

1 District Agricultural Officer.
2 Demonstrators.

Comilla district—

1 District Agricultural Officer.
2 Demonstrators.

Chittagong district—

1 District Agricultural Officer (he supervises the work of Noakhali district too).
1 Demonstrator.

Noakhali district—

1 Demonstrator.

District work.—The number of Agricultural Officers and demonstrators is too small, and is now affecting the speed of expansion. The demand for seed of our recommended varieties of crops was very high, and duly a portion of it could

be supplied to the interested cultivators. The efficacy of departmental jute seed is so much appreciated by the cultivators that though the price of seed was increased by Rs. 5 per maund this year, we could scarcely manage to meet one-third of the demand with the stock at our disposal.

The supply of paddy seed both *aman* (*Indrasail*) and *aus* (*Kataktara*) fell short owing to our limited stock.

In a province like Bengal, the Agricultural Department is the only department with which every family is directly or indirectly concerned. It is natural therefore that it should be the duty of one and all to see that the recommended varieties of crops and the improved methods of cultivation are adopted by our people to increase the wealth of the province. That being the idea, they are anxious to procure seeds of good strain found out by the Department of Agriculture.

Paddy.—The area under *Indrasail* (*aman*) and *Kataktara* (*aus*) paddy has considerably increased, partly through automatic expansion and partly through sale of seed from the Government farms. The demand of seed was very heavy and could not be properly met owing to admixture of seed with other varieties grown on cultivator's land. Another reason why the supply fell short was that the private growers instead of storing the stock disposed of major part of the yield for ordinary consumption. Organizations are therefore being made to induce the private growers to preserve at least half of the yield of their farms for seed purposes.

Dudsar.—This is another variety of *aman* paddy which has made a name in a very short period. In many respects its habits are like those of *Indrasail*, but it ripens a full fortnight earlier. It is expected that this variety too will be very popular within a few years.

Besides the above three, some other good varieties of paddy have also been found out by pure culture by the Economic Botanist. Of these new varieties, *Jhingasail* (*aman*), *Charnak* and *Surjamukhi* (*aus*) will find a great demand in near future.

The following paddy seeds were sold by us during the year in the circle:—

	Md.	sr.	ch.
Indrasail			
Dudsar			
Kataktara			

Sugarcane.—Yellow *tanna* canes are now well established in the circle. Its automatic expansion is considerable, and the supply of healthy cuttings is being pushed wherever there is a demand. During the last few years, the variety has become very popular in the Kishoreganj subdivision of Mymensingh district, also in Munshiganj (Rampal), Kaliganj and Narsingdi thanas of the Dacca district. It is also making progress in the districts of Chittagong and Noakhali.

The District Agricultural Officer, Chittagong, supplied 550,000 cuttings in the year under review.

Other new varieties of canes are also being tried at Dacca C. O. 213 is already beyond the experimental stage, and is being given out to cultivators.

Jute.—As to the demand of jute seed of our department, I have already given an idea above. We could supply 2,800 maunds only to the public, whereas the demand was not less than three times this amount. Special arrangements are being made for future supplies.

Tobacco.—Seeds of good varieties are being tried in various districts, and are already making progress.

Associations and organizations.—Seeds of improved races of crops is multiplied at all Government farms. But the seed produced is quite insufficient to meet the demand. In order to cope with the public requisitions, a systematic organisation for seed growing by well-to-do agriculturists and merchants is now in process of organization, and will henceforth be an important part of our propaganda work in the districts.

Many agricultural associations in various districts are in a moribund condition. Probably because they have not definite enough work to do. It is to be hoped that the running of small seed farms will give occupation to the members.

Though our seeds are grown on a very big area by the cultivators of the province, they are grown on small and scattered plots generally. Hence it is not

expected that the ordinary cultivators' collection of seed can be pure. Besides the cultivators either consume the yield themselves as food or sell it, keeping only a small fraction as seed for his own sowing.

To avoid these difficulties and also the unnecessary expenditure for packing and freightage, etc., for bringing bulky seeds like paddy from long distances, small seed farms of the area of 2 acres or more are being organized in the lands of responsible agriculturists who undertake to preserve the yield in stock for their next sowing and for disposing of it as seed.

Work has already been commenced and arrangement made to grow our seeds on such small farms in the Sadar Subdivision of the Dacca district. Kamalapur, Kurmitola, Tangi, Kaliganj, Kapasia, Joydebpur, Sripur and some other centres have been selected. The manager and other officer of the Joydebpur Ward's Estate and some respectable jotedars of the district are helping us in our new project. Babu Jnanendra Mohan Sen, the Agricultural Officer of Dacca district, is in charge of this seed farm organization. Both the Director of Agriculture and Economic Botanist are taking keen interest in the matter and ever ready to help us in this organization.

The Court of Wards Estate of Joydebpur got a very handsome provision in the budget for the improvement of agriculture in the estate. The estate possesses all the varieties of land typical for the district. Propagation of improved crops recommended by our department may be an easy solution by organizing small private seed farms on lands belonging to important jotedars.

There are some small irrigation projects under contemplation. It is believed by excavating a few small canals (connecting two or more already low tracts or bhil areas), a considerable area of uncultivable lands may be brought under proper cultivation owing to good drainage, and thereby the raiyats may be highly benefited and the revenue of the estate increased.

The Court of Wards Estate, Brahmanbaria allotted Rs. 1,000 in addition to the farm budget, for financing the supply of recommended varieties of seeds and manures among the tenants.

Exhibitions.—There were eight exhibitions in this circle during the year. Of these, Dacca and Faridpur exhibitions were organized in a big scale and the department took active parts.

Dacca Exhibition.—It was open by His Excellency the Governor of Bengal. He admired the departmental work and activities in highly appreciable terms. A flower show formed a part of this exhibition, and the Economic Botanist took the leading part in it, whereas the charge of the agricultural stall was held by Babu Santi Prasad Sen Gupta. The Director of Agriculture, Bengal, presided over the agricultural meeting held on the exhibition ground where Rai Saheb D. N. Mitra, District Agricultural Officer of Faridpur, read an interesting paper on agriculture. The exhibition lasted for two weeks and drew attention of thousands of people.

Manickganj Exhibition.—Dr. Hector, the then Director of Agriculture, opened the exhibition at Manickganj. Babu Jnanendra Mohan Sen Gupta, District Agricultural Officer of Dacca, arranged a decent stall of departmental exhibits. Cattle show and plough match were very interesting and attractive. All credit is due to the Subdivisional Officer and the Secretary of the Manickganj Agricultural Association.

Faridpur Exhibition.—There were two exhibitions in May 1925 and January 1926.

The former exhibition was organized in connection with the Bengal Provincial Conference. Mr. Gandhi opened the exhibition. A paper on the activities of the department was read by Rai Saheb D. N. Mitra at the opening of the exhibition, and it was highly appreciated by Mr. Gandhi and others. The exhibition was very successful and was attended by a large number of people. The visitors, including Mr. Gandhi and Sir P. C. Ray, evinced great interest in the departmental exhibits.

The second exhibition was opened by the Hon'ble Maharaja Bahadur of Nadia. The special feature of this exhibition was that a small garden was laid out in the centre of exhibition ground showing demonstration of green crops. It was also largely attended and appreciated.

Rai Saheb D. N. Mitra is to be congratulated on the success of both these exhibitions.

An Agricultural Exhibition was organized at Char Boira, and it was opened by the Collector of Faridpur.

An agricultural show was organized at Korakdi; it was popular in all respects.

An Agricultural Conference was organized at Baliakandi, and it was presided over by Dr. Suresh Chandra Banerjee of Abhoya Asram of Comilla. Samples of crops and charts, etc., were exhibited by the department.

Chittagong Exhibition.—The Quapara Exhibition in the Chittagong district got the usual contribution from the department and the District Agricultural Officer of Chittagong attended it.

I attended the exhibitions of Dacca, Manickganj and Faridpur.

Acknowledgments.—Though the Deputy Director had to work with a limited number of staff, both in office and the district, I am glad to mention here that the heavy and tremendous work of the circle was satisfactorily done owing to active and willing services received from the staff.

Thanks are due to the District Magistrates, Subdivisional Officers, Circle Officers, Wards Estate Managers and Khasmahal Officers for their kind help rendered to our officers.

J. N. SIRKAR,

Deputy Director of Agriculture,
Eastern Circle (Offg.).

APPENDIX VI.

Annual Report of the Deputy Director of Agriculture, Western Circle, for the year 1925-26.

Charges and tours.—I held charge of the circle throughout the year and was out on tour for 179 days.

Staff.—Work had to be carried on with the staff as it stood after retrenchment.

Seed-store.—In Western Circle there is no Government seed-store, excepting one only in name at the Berhampore Farm, for which also no funds were provided. The only amount to its credit was a sum of Rs. 23-10 from the previous year's *pro formá* account which was utilised in supplying 4 maunds 20 seers of castor-cake. It may be mentioned, however, in this connection that the 24-Parganas District Board has started in October 1925 four seed-stores at Baraset, Diamond Harbour, Basirhat and Ballyganj. The Agricultural Officers of all the districts however received indents for seeds, etc., from local people, and effected their timely supply as will be seen from the statement given in Appendix I.

Season.—In the Presidency Division the weather was not so unfavourable for agricultural work as in the Burdwan Division. In the former the total distribution was not uniform, but in the latter it was not only uniform but also very scanty. The *kharif* crops as well as the *rabi* crops did not suffer much from drought, but the absence of and poor rainfall in the *rahar* tracts in the transplanted paddy season affected the growth, and consequently reduced the outturn of the crops.

Farms.

1. **Chinsura Farm.**—This is the only farm in the circle where research and experiments are conducted along with demonstration of crops, etc.

2. The season was unfavourable throughout. Transplanting of *aman* paddy had to be abandoned on account of lack of rainfall. The yields of other crops were seriously affected.

3. During the year under report 83·345 acres were under cultivation.

Commercial cultivation.—Jute was grown on 4·85 acres from which a profit estimated at Rs. 752 was obtained. Sugarcane *tanna*, Coimbatore and Samsara were grown on ·657, ·187 and ·038 acres respectively on commercial basis. Owing to late planting of 50 acres in the area relinquished by Messrs. Sutton and Sons, the results have not been very convincing.

The highest yield of *gur* 110 maunds per acre on actual of ·10 acre was obtained strangely from the non-irrigation plots in the cold weather irrigation series.

In the cold weather irrigation experiment series, though no irrigation plots gave the best yield, the highest percentage of sucrose was obtained from the four irrigation plots.

In the manurial series, as in the year previous, castorcake yielded the highest *gur*.

The Java method of rapid propagation is being continued.

Aus paddy.—The yield of the *aus* was very poor. Transplantation of Economic Botanist's experimental *aus* could not be done for want of sufficient water.

Aman paddy.—The scheme of transplanted *aman* paddy had to be abandoned for want of sufficient and timely rain. Some attempt only was made for growing seeds for the next year with indifferent results. Some broadcasted *aman* (*Indrasail*) however was taken from the jhil lands which also served the purpose of reclaiming the area.

Fodder crops.—*Juar* was grown on 1·75 acres besides various other fodder were conducted for and grown for seeds.

Rabi crops.—Gram, *khesari*, peas, wheat, linseed were tried in the *rabi* season. Due to unusual drought, the outturn was not as satisfactory as it should be.

Banana and lemon plantations are in good condition and the sale-proceeds were encouraging.

A part of "D" block has been reclaimed by filling up and levelling.

Messrs. Sutton & Sons relinquished the area leased out to them. The Calcutta Technological School had the Agricultural School as well as the entire "B" block in their charge.

Charge.—Babu Hem Chandra Roy, B.A., was in charge of the farm throughout the year.

Berhampore Farm.—This farm has been started for demonstrating the superiority of departmental seeds and the advantages of irrigation, as well as for conducting of experiments with new crops, manures and implements. Out of the total area of 43·91 acres, 17 acres have been reclaimed and cropped during the year, bringing the total area of cultivation to 30 acres. The season was on the whole favourable for both *kharif* and *rabi* crops. This year *Kataktara* was tried against *Malkajamra*, and the result appears to be in favour of the latter. Chinsura green jute was grown for seed purpose as well as for fibre on 10 bighas and a profit of Rs. 912 has been reaped. Experiments with *tanna* and C. O. 213 sugar canes were carried on in 12 bighas, and in the ensuing year the sugarcane area is being extended to 24 bighas. Pensylvania and motihari tobaccoes have been introduced and the results are promising. A new variety of fodder, the Japanese millet, was tried and found to be a very successful crop. A good number of pure line plots of pulses and oil-seed were grown for observation of the Economic Botanist. The Peter Junior Pump proved a great success in irrigating the extensive areas of sugarcane and wheat. The re-excavation of the Central Tank undertaken this year will improve the sanitation of the farm and remove the much felt want of water-supply for the cattle and labour as well as afford better facilities for irrigation and better opportunities for starting fishery.

An additional godown and a few out-houses to provide accommodation for the farm durwan and peon as well as for the menials accompanying inspecting officers and for kitchen of inspecting officers will complete the list of buildings, the necessity of which are keenly felt.

Charge.—Babu Sujyoti Nath Chatterjee was in charge of the farm throughout the year.

Gosaba Farm.—This farm of 20 bighas is located in the interior of the Sunderbans in the zamindari of Sir Daniel Hamilton, who is the sole proprietor of this farm. The farm was started by Sir Daniel with the object of finding out means for reclaiming saline usar land and to determine crops that would fetch a better revenue.

Season.—The weather was rather unfavourable in the beginning of the *kharif* season, and in its latter part the excessive rainfall affected pollination of paddy resulting in poor outturn.

Crops grown.—During the year yellow *tanna* sugarcane, jute sunn hemp, *Dhaincha*, *Kataktara* paddy and deep-water paddy were grown. The year was rather unfavourable as most of the crops suffered from the effects of insect attack and salinity in the soil.

The expenses of the farm are borne by Sir Daniel and the department cooperates with him in lending the services of an Agricultural Officer.

Charge.—Babu Nani Gopal Burman Roy was in charge of the farm from the beginning of the year till September 1925 when Babu Sankar Prosad Bhattacharjee took over charge from him.

Jessore Khas Mahal Farm.—This farm of 5 acres was started by the Khas Mahal in collaboration with the Agricultural Department for demonstration of the superior varieties of crops and multiplication of their seeds with a view to meet the demand.

The season so far the *kharif* crops are concerned was unfavourable in the beginning, but the late rains somewhat saved the crops. The *rabi* season was favourable in the beginning, but as the rainfall was very scanty towards the end of the season, the crops suffered from the effects of the drought.

Chinsura green jute was grown for fibre and also for seed. The yield of fibre was over 20 maunds per acre. D. 154 grown for seed only was also successful. *Tanna* sugarcane gave a good profit. Peas, *masur*, mustard, Darjeeling potatoes were grown at a profit.

In view of the good work that this farm is doing, it has been proposed to extend its area, and the District Board has promised to pay Rs. 2,000 for acquisition of new lands.

The farm has not got a regular grant for its maintenance. As the cultivation charges are mostly repaid in the shape of sale-proceeds, the farm should be given the benefit of *pro formâ* accounts.

Charge.—Babu Virarudra Roy was in charge of the farm throughout the year, excepting for the periods from 4th November 1925 to 1st January 1926, when Babu P. K. Bhowmick acted in his place, and from the 1st to 20th March 1926 when the Sadar Demonstrator was in charge.

Bankura Farm.—This farm has an area of 29 acres and is situated within 2 miles from the railway station.

The object of the farm is to study local agricultural problems with a view to solve them. The actual area under cultivation is 15·6 acres. The laying out of the farm is almost complete.

Season.—The season was not a favourable one, the severe drought in September affected *aus* paddy very badly, the *aman* paddy to some extent. Groundnut died a premature death before pod formation was complete. The November drought affected *kulthi*. Rain in January damaged potato crop. The season for sugarcane was favourable. Rainfall in early March has helped in planting of new sugarcane plots. No area was cultivated on economic basis for dearth of suitable land.

Sugarcane was grown successfully. *Tanna* and *bhuri* (a local variety) were tried side by side. *Tanna* giving in most cases better results with individual canes 11 feet high and 6 seers in weight.

Darjeeling and local potatoes were tried on 1/10th acre, the former giving an outturn of 150 maunds per acre against 130 maunds of the latter. Soybean was grown for the second time with considerable success during the monsoon. Its extensive cultivation promises to solve the fodder problem in the district.

Groundnut was tried but met with indifferent results due to drought.

Rahar was grown in mixture with maize on ·3 acre. The maize was fed to the cattle and *rahar* kept for grains—the quantity harvested being 2 maunds 38 seers.

Mulberry.—It was grown on two plots on ·2 acre on danga land and the plants are thriving well. *Juar* was grown in the Agricultural Chemist's area to test the uniformity of the soil.

Cotton and maize as a mixed crop was successful. The maize was harvested for fodder. The cotton is expected to give an yield of 5 maunds of seed cotton to the acre. The Second Economic Botanist's varieties were grown for observation and the results, 7½ maunds per acre, are very encouraging.

Kataktara and *Charnock* were tried along with *Newali* and *Bhutmari* but the crops failed.

Transplanted paddy *Indrasail* was tried along with *Jhingasal*, *Dudsar*, *Dadkhani*, *Badshabhog* and *Nagra*, and the general outturn was satisfactory. *Indrasail* giving an outturn of 29 maunds per acre.

In the *rabi* season the cereals of wheat, barley and oats were tried, but the crops failed for want of moisture in the soil. *Rabi* pulses, peas and lentils were grown with indifferent results. Country vegetables, *e.g.*, *kumra*, and banana are being tried, and the results are awaited.

Charge.—The farm was in charge of Babu Raj Nath Roy, District Agricultural Officer, Bankura.

Suri Farm.—Out of the total area of 33 acres, 23 acres have been laid out for cultivation.

Season.—The season was altogether unfavourable in as much as the monsoon commenced rather early and ceased in the middle of October when water was badly wanted. As a result of this effect, both *kharif* and *rabi* crops suffered very much.

Besides unfavourable weather conditions, proper laying out by scraping and filling as necessary in most places have upset the uniformity of the soil, and do not admit of any regular cropping.

The Economic Botanist's paddies were grown under artificial irrigation, and single plants of suitable varieties were selected.

The Agricultural Chemist continued his test on soil uniformity and tried Motihari and Turkish tobaccoes.

The Second Economic Botanist had his tests on cotton, fodder crops, *rabi* pulses and oil-seeds.

The Fibre Expert conducted trials on growing jute for seed and fibre, and it has been seen that jute can be grown in suitable places in the district.

Charge.—Babu Santi Prosad Sen Gupta was the District Agricultural Officer till May 1925 when he was relieved by Babu Chuni Lal Mustafi.

Burdwan Farm.—This farm of 35 acres was started in 1885 and was owned by the Maharajadhiraj of Burdwan until October 1921 since when it has become a Government district farm.

For want of a fencing round the farm, there was considerable damage to the crops all along by stray cattle and wild boars, and as this work has been taken up, it will afford much relief to the farm staff. The farm was started with the object of demonstrating seeds, manures, etc., recommended by the department and also propagating improved crops for sale to outside people.

Season.—The season on the whole was unfavourable as there was a deficiency in the total rainfall by 12 inches. So far jute and sugarcane crops are concerned, the season was tolerable, but was bad for winter paddy.

In the economic area *Nagra* paddy, *Indrasail* paddy and jute were grown. The margin of profit on cost of cultivation in all the crops was good.

Economic Botanist's transplanted paddy trials were undertaken with *Nagra*, *Indrasail*, *Kartiesal*, *Dudkalma* and *Jatakalma*, and it was found that *Nagra Indrasail* and *Jhingasal* yielded more.

Manurial experiments on sugarcane were undertaken to determine the effect of nitrate of soda, superphosphate cowdung *versus* castorcake and cowdung. The artificial manures proved to be better as can be seen from the result recorded, *viz.*, 20 maunds 30 seers of *gur* against 24 maunds 12 seers 8 chitaks of *gur* from an area of :5 acre. Manurial experiments were also conducted with potato, and the plots manured with artificials gave less outturn than the plots manured with castorcake.

Miscellaneous crops like groundnut, wheat, gram and linseed were grown. The results obtained were not satisfactory owing to damage by white ants and stray cattle. Indigo was grown to improve texture of the soil.

Charge.—Babu Hiran Kumar Basak was in charge of the farm throughout the year.

Private Farms.—The names of the private farms in this circle are given below :—

1. Gosaba Farm in 24-Parganas.

In Jessore.

2. Nakful Farm.
3. Sen's Farm, Bongong.
4. Gadgachi Farm, Gadgachi.
5. Betbaria Farm.
6. Kurigarm Farm.
7. Botikaganda Farm.
8. Satrujitpur Farm.
9. M. K. Harindi Gardens.

In Nadia.

10. Rai Bahadur K. N. Mallick's Farm at Ranaghat.
11. Badkulla Farm.
12. Nakashipara Farm.
13. Iswarchandra Khetbari.
14. Chapra Middle English School Farm.
15. Harbaradi Agricultural Farm.
16. Ballavpur Farm.

In Murshidabad.

17. Banjetia Farm of Maharaja of Kassimbazar.
18. Nashipur Palace Farm of Nashipore Raj Estate.
19. Katgola Gardens owned by Babu Jagatpat Singh.
20. Private Farm owned by Babu Sasindra Nath Mukerji.
21. Poultry and Agricultural Farm of Babu Kishori Sarkar.
22. Farm of Babu Dharani Kumar Ghose of Lalbagh.
23. Farm of Babu Jnanendra Narain Choudhury at Nimtita.
24. Poorland Farm of Professor S. Singh at Berhampore.

In Howrah.

25. Baksara Farm near Santragachi owned by Mr. N. C. Boral.
26. Nakole Farm of Babu Nirode Nath Misra.
27. Dairy Farm at Lillooah.
28. Ayama Demonstration Farm.

In Hooghly.

29. Makalpore Farm of Babu Mani Mohan Singh Roy.
30. Haripal Farm of Babu Janaki Nath Singh Roy.
31. Bhandahati Farm of Babu Janaki Nath Singh Roy.
32. Panisheola Farm of Babu Basanta Kumar Mitra.
33. Jijur Farm of Babu Sarbagunakar Mitra.
34. Itachona Farm of Rai Bejoy Narain Kundu Bahadur.
35. Bakulia Farm of Babu Narendra Nath Mookerji.

In Burdwan.

36. Nadiha Farm of Babu Aghorenath Mookerji.

In Birbhum.

37. Sultanpur Farm of Rai Bahadur Abinash Ch. Banerjee.
38. Surul Farm of Biswabharati University.

In Bankura.

39. Farm of Krishi Mondal & Co. at Sirpuria.
40. Farm of Babu Kishori Mohan Chatterjee of Brindabanpur.

In Midnapore.

41. Mahisadal Farm.

Of the private farms mentioned in the circle, detailed informations are given of the few important ones—

(1) *Gosaba Farm.*—A report of the farm is given on Appendix XIII.

(2) *Nakful Farm.*—This farm belongs to Babu Bejoy Mohan Banerjee. The total area of the farm is 7 acres. Among departmental crops C. G. jute, D. 154 jute, *Kataktara aus* were cultivated with success. A bigha of land has been put under mulberry and rearing of silk worms on a small scale has been arranged under the guidance of Superintendent of Sericulture, Alipore.

(3) *Sen's Farm, Bongong.*—The total area under departmental crops were 9 bighas devoted to the cultivation of C. G. and D. 154 jute, the yields being respectively 5 maunds 25 seers and 6 maunds 10 seers of fibre per bigha.

(4) *Gadgachi Farm.*—Babu Moni Mohan Bhattacharjee is the proprietor of the farm, which has an area of 50 bighas, out of which 25 bighas are under cultivation. A poultry farm has also been started by him with 150 ducks. The tobacco demonstration of the Agricultural Chemist is also being conducted here. Departmental crops of *Kataktara*, D. 154 jute, C. G. jute, *tanna* sugarcane were grown with good results.

(5) *Betbaria Farm.*—On this farm of 20 bighas, owned by Babu Dhirendra Nath Roy, Zamindar, Chinsura green, *tanna* sugarcane, *Kataktara aus* and English and country vegetables were grown with more or less success.

(6) *Kurigram Farm.*—This farm of about 10 bighas belongs to Babu Nripendra Bhusan Roy, Zamindar, Narail, where Chinsura green jute, *Kataktara aus* and *tanna* sugarcane and potatoes were grown, but unfortunately no account was kept.

(7) *Batikadanga Farm.*—This farm of 10 bighas belongs to Babu Mati Lal Vaidya; *tanna* sugarcane, Chinsura green jute, Darjeeling potatoes were grown with profit.

(8) *Satrajitpur Farm.*—This farm of 100 bighas has been started by Babu Kedar Nath Bhattacharjee. Chinsura green jute, *tanna* sugarcane were grown. The former gave an outturn of 8 maunds 20 seers per bigha and the latter has been reserved for seed purpose.

(9) *M. K. Harindi Garden.*—This garden of 15 bighas were started in the beginning of the year. The organizers propose to extend the garden.

(10) *Mullick's Agricultural Farm at Ranaghat.*—This farm, although owned by a private gentleman (Rai Bahadur K. N. Mullick), is run on departmental lines. Labour saving appliances, *e.g.*, tractors, crushers, etc., are in use on the farm. This year Rai Bahadur has planted 30 bighas of C.O. 213 sugarcane.

(11) *Badkulla Farm.*—This farm has been started by Professor J. M. Bose, who has devoted a large area to sugarcane. A power pump is in use for irrigation.

(13) *Iswar Chandra Khetbari.*—This farm of 120 bighas has been started by Babu H. D. Chatterjee through the persuasion of his son, Babu S. N. Chatterjee, District Agricultural Officer, Murshidabad. It is hoped that this farm will be a centre of departmental activity.

(14) *Chapra School Farm.*—

(16) *Ballavpur Farm.*—A report of this farm has been submitted with the detailed report.

(17) *Banjetia Farm of Maharaja of Kasimbazar.*—This farm of 250 bighas is located in the heart of an agricultural tract produced 9 maunds of Chinsura green jute seed in the *kharif*, Pusa wheat, Darjeeling potato and Coimbatore sugarcanes were being grown for the *rabi*. The outturn of the Darjeeling potato has been estimated at 85 maunds per bigha.

(18) *Nashipur Palace Farm.*—The Maharaja Kumar R. N. Singh Roy of Nashipore has grown here turmeric very successfully, and is extending the area from 30 to 100 bighas.

(19) *Katgola Gardens.*—Here *tanna* and C.O. 213 sugarcane cuttings were tried successfully under a retrenched District Agricultural Officer who was appointed the Superintendent of the Farm.

(20) *Farm of Babu S. Mukerjee at Berhampore.*—This gentleman grew Chinsura green jute on 25 bighas, and got an outturn of 8-9 maunds per bigha.

(21) *Poultry and Agricultural Farm at Berhampore of Babu K. Sarkar.*—This new farm has been utilised in connection with the introduction of Dacca ganderi and C.O. 213 sugarcanes.

(22) *Farm of Babu Dharani Kumar Ghosh at Lalbagh.*—The owner has a large mango garden, and has acquired 200 bighas to start agricultural farm.

(23) *Farm of Babu Jnanendra Narain Choudhury.*—Here Chinsura green jute and *Kataktara* paddy were grown with excellent results. The crop of Pusa wheat grown in the *rabi* season impressed the Divisional Commissioner, who visited the farm. Manurial trials with artificial manures on potato conducted by Jnan Babu were very instructive. A small kitchen garden attached to this farm measuring 12 bighas, fetches a net revenue of Rs. 700.

(27) *Dairy Farm at Lillooah.*—This farm maintains 150 heads of cattle yielding 12½ maunds of milk daily. It has an area of 150 bighas where fodder crops like *juar, bajra,* maize and pulses are grown.

(29) *Makalpur Farm.*—Babu Monomahan Singh Roy is the owner of the farm. Nine bighas of C. G. jute, 2 bighas of Charnock *aus*, 5 bighas of *Indrasail* were grown with success.

(31) Babu Janaki Nath Singh Roy got 50 maunds of C. G. jute from 5 bighas in his farm at Haripal.

(32) *Panisheola Farm.*—Babu Basanta Kumar Mitra grew 2 bighas of Charnock *aus*, 10 bighas of *Indrasail*, 5 bighas of *Nagra* and 1 bigha of *tanna* sugarcane.

(34) *Itachona Farm.*—Rai Bejoy Narain Kundu Bahadur of Itachona has a farm of 100 bighas on which 12 bighas of *Kataktara*, 5 bighas of *Indrasail*, 10 bighas of *Jhingasal*, 23 bighas of *Nagra* and 8 bighas of *Dadkhani* were grown.

(35) *Bakulia Farm.*—

(36) Nadiha Farm belonging to Babu Aghore Nath Mukerjee is the best organized farm in Burdwan district. Here departmental crops are grown for supply of seeds.

(39) *Farm of Krishi Mondal & Co. at Sirpuria in Bankura.*—The farm in addition to cultivation of agricultural crops has added poultry in its programme of work.

(40) *Brindabanpur Farm.*—This farm is fenced all round—has got 5 Horse Power Peter Oil Engine Pump for irrigation. Sugarcane, groundnut, potato and *palwal* were grown successfully.

(41) *Mahisadal Farm.*—This farm of 32 bighas is maintained by the District Board of Midnapore under the management of a committee with the Subdivisional Officer as President and the Sub-Registrar of Mahisadal as Secretary. Owing to the fact that no allotment was made by the District Board, the farm was run with balance of last year supplemented by sale-proceeds of farm produce.

Demonstrations—Presidency Division.—In 24-Parganas demonstrations were carried out with Chinsura green jute, *Indrasail*, *Kataktara* paddies and *tanna* sugarcane. Of these, Chinsura green jute seeds have given excellent results wherever tried, and the demand of this seed is steadily on the increase. *Indrasail* and *Kataktara* have given satisfaction in most places. *Tanna* sugarcane also is slowly growing in popularity.

In Jessore *Kataktara* has done well in Sadar, Bongong and Jhenidah, and in some places in Narail and Magura. Charnock appears to be very promising. *Indrasail* was found suitable in Narail and Magura on medium lands. Chinsura green jute was much appreciated by the raiyats. D. 154 was tried in the eastern part of the district in lowlying areas, and the demand is increasing. Jessore being a date sugar district, *tanna* sugarcane has not been able to make much headway.

In Khulna, the departmental jute and paddy seeds have gained a foothold. *Tanna* is not much in demand as this is a date-*gur* district.

In Nadia, *Kataktara* has been successful in most places, and its area has expanded to 250 bighas. *Indrasail* has met with indifferent results. C. G. jute seed has been uniformly successful everywhere, and the area under this crop in 1925-26 may be estimated at 4,800 bighas. Due to unfavourable conditions, yellow *tanna* has not given good results. Besides these, Pusa wheat and Motihari tobacco were demonstrated—the former has given good results.

In Murshidabad, demonstrations were carried out with departmental jute, *Kataktra*, Charnock, *Indrasail* and *Dudsar* paddies, Pusa wheat. In Jangipur *Kataktara* gave the highest outturn of 21 maunds per acre, D. 154 21 maunds 30 seers, of fibre, and C. G. 24 maunds per acre of fibre. *Indrasail* and *Dudsar* suffered for want of rain in flowering season.

In Howrah, demonstrations of jute, paddy, sugarcane potatoes and tobacco were continued. The superiority of departmental seeds yielding 2 maunds more than local varieties were established. Conservation of cowdung in pit under shed has been introduced in Ayama, Sarasanu, Nakole and Balichak.

In Hooghly, the departmental recommended crops—*Tanna* cane, *Kataktara*, Charnock, *Indrasail*, *Nagra*, C. G. jute, *Jhingasal*, were grown at Makalpur, Haripal, Bakulia, Bhanderhati, Panisheola, Jejpur and Itachona with good results.

In Burdwan, *Kataktara* and *Indrasail* paddies were not successful due to unfavourable weather. C. G. jute was the only crop that gave very promising results, *viz.*, 1 maund of extra fibre per bigha. Pusa wheat seed was introduced with good results.

In Suri, experiments of *tanna* sugarcane, C. G. jute, *Indrasail* paddy and Pusa wheat was demonstrated, and the cultivators were impressed with the quality and outturn of the departmental seeds.

In Bankura, demonstrations on *tanna* sugarcane, *Kataktara* and *Indrasail* paddies were made in different parts of the district. *Tanna* sugarcane was successful, but the paddies grew indifferently due to unfavourable weather conditions.

In Midnapore, demonstrations on *tanna* sugarcane, groundnut, C. G. jute seed, *Kataktara* and *Indrasail* paddies, Darjeeling potatoes and Pusa wheats were undertaken. The crops grew exceedingly well and established their respective superiorty. *Kataktara* and *Indrasail* paddy each gave an outturn of 10 maunds per bigha. Groundnut gave an outturn of 8 maunds per bigha. Pusa wheat and sugarcane results are awaited.

The Chilean Nitrate Committe (Sodium Delegation) very kindly supplied nitrate of soda and superphosphate free of costs to all the District Agricultural Officers for trial on paddy, jute, sugarcane and potato for which the Committee deserves our best thanks for the collaboration with us in this matter of scientific research.

Agricultural Associations.—A meeting of the Divisional Association, Presidency Division, was held during the year when several gentlemen of lead and light assembled in a meeting under the Chairmanship of Mr. J. N. Gupta, Divisional Commissioner, and important matters like destruction of water hyacinth, starting of farms, seed-stores, etc., were discussed. The sum of Rs. 1,000 received by the association from the department as an annual contribution was equally distributed as in the previous years. Among the five district agricultural associations, the 24-Parganas District Agricultural Association distributed 6 maunds of Chinsura green jute seeds, 5½ maunds of *Kataktara aus* paddy and 3 maunds of *Indrasail* paddy among the raiyats. Four subdivisional agricultural associations have been started at Baraset, Basirhat, Diamond Harbour and Alipore to look after the seed-stores started at the respective places by the District Board, Alipore.

In Jessore the district and the four subdivisional agricultural associations distributed departmental improved seeds at different centres in the district.

In Khulna the District Agricultural Association conducted demonstration work in its small garden measuring only 1 bigha. During the later part of the year, the association has taken lease of 24 bighas of land from the Baptist Mission, Khulna, to start a farm on departmental lines, and has rented a building for the purpose of a seed-store.

In Nadia, besides the District Agricultural Association, there are four subdivisional associations, all of them have distributed departmental improved seeds.

In Murshidabad the District Agricultural Association spent about Rs. 90 on free supply of seeds and Rs. 250 on seed supply work, and in course of the year, the following seeds were distributed:—

1.	Darjeeling potato	29 mds.
2.	Patnai peas	1 md.
3.	Pusa wheat	5 mds.
4.	*Indrasail* paddy	5 „
5.	*Dudsar* paddy	5 „
6.	Castorcake	30 „
7.	Sugar-cane cuttings	3,000

The association organized an agricultural show at the farm during the year.

Of the subdivisional associations, Jangipur is doing very useful work. Over Rs. 1,000 worth of departmental seeds were indented by this institution. The Lalbagh Association has indented departmental seeds worth Rs. 40 and the Kandi Association has decided to start a seed-store in collaboration with the Agricultural Department and the Kandi Central Co-operative Bank.

Burdwan Divisional Agricultural Association.—A meeting was held at Chinsura under the Chairmanship of Mr. Cook, Divisional Commissioner. The useful work done by the department was much appreciated, and the programme of work drawn for the ensuing year was approved. The sum of Rs. 1,000 was distributed for propaganda work in the different districts in the Division.

In Howrah, besides the District Agricultural Association, there are four village associations, which are doing good work. In Hooghly, Chinsura green jute seeds and Saru *aus* seeds were distributed on behalf of the District Agricultural Association—four members of the District Association were given sodium nitrate and superphosphate for trial on paddy, but unfortunately good results were not obtained.

In Burdwan, the District Agricultural Association has done very useful work by the successful demonstration of our seeds and manures. The District Agricultural Officer is the Secretary of this association.

In Suri, the District Agricultural Association financed the demonstrations organized in the Suri Agricultural and Industrial Exhibition and published a few leaflets on irrigation. The District Association unfortunately could not do much in the way of seed supply for want of funds.

In Bankura, no tangible work has been done by the District Association or by the 75 branch agricultural associations.

In Midnapore as the District Agricultural Association was in a moribund state, the Collector summoned a meeting with a view to re-organize the same. Branch agricultural associations were started in Ghatal, Jhargram, Tamluk and Contai during the year.

Agricultural Exhibition.—In 24-Parganas an Agricultural and Industrial Exhibition was held at Baraset in which departmental exhibits were demonstrated. This exhibition got a contribution of Rs. 150 from the department (seeds supplied by Chinsura Farm).

In Khulna, an Agricultural and Industrial Exhibition was held during the year and a fair collection of agricultural products was exhibited (seeds supplied by Chinsura Farm).

In Nadia, an Industrial and Agricultural Exhibition was held at the Krishnagar Palace in which model irrigation implements were practically demonstrated along with a good set of departmental exhibits (seeds mostly supplied by Chinsura Farm).

In Murshidabad, an Agricultural Show was held at Berhampore Farm. This show was attended by the raiyats in large numbers, and, among other things, practical demonstrations of raising water by Petter Oil Engine, of ploughing by Motor plough as well as *gur*-making was given and were much appreciated. An Agricultural Exhibition was also held at Kesherpahar in the subdivision of Kandi, and it was attended with success.

In Hooghly, two industrial and agricultural exhibitions were held—one in Chinsura and the other at Guptipara. Both the exhibitions were well attended by the raiyats. At the Chinsura Exhibition some of the farm produce attracted universal admiration.

In Burdwan, an Agricultural and Industrial Exhibition was held at Ghushkara and at Chupi, and departmental exhibits were shown at both the places (seeds supplied by Chinsura Farm).

In Suri the annual mela was held where the working of Peter Pump was demonstrated.

Agricultural Education.—In Jessore Binodepur High English School has introduced agriculture in the first four classes. In Nadia the authorities of King Edward's Middle English School at Hat Chapra has introduced agriculture in its curriculum and the District Agricultural Officer delivered periodical lectures at the school throughout the year. A separate report of the Principal of the school is enclosed.

In Murshidabad attempt is being made to introduce agriculture in the high English schools at Amtala, Lalbagh, Nimtita, Kanchantala and Borala. In the Berhampore Farm a young man named Gopica Ranjan Chatterjee was given training for three months, and a cultivator's son on a monthly wage has been taken in pursuance of Government policy in the matter. A young man named Udai Narayan Singh Roy has applied through the department for a full course of training at the Cawnpore Agricultural College.

At Balichak in Howrah, agricultural instructions were imparted to the boys of local middle English school through passed students of Chinsura Agricultural School.

In Hooghly, Rai B. N. Kundu Bahadur of Itachona has introduced agriculture in the local school and had appointed a Retrenched Agricultural Officer for the purpose. Babu N. Mukerji of Bakulia has arranged for practical training in agriculture on the local middle English school. There is a proposal to start a High English School at Apurbapur, the native village of the Hon'ble Mr. S. N. Mullick. The Calcutta Technological College is in charge of the Chinsura Agricultural School started by Government.

In Burdwan, the Amarpur Agricultural School continued to do very useful work as can be seen from the separate report of the Superintendent enclosed herewith. At Asansol, there is an agricultural class in the Methodist Mission School at Asabari where practical training in agriculture is given to young boys.

In Birbhum, a scheme for imparting agricultural education has been under consideration at Sultanpur and Labhpur. In the Suri Farm a cultivator's son has been taken in as a student cultivator on daily wages. A batch of boys at Santiniketan Bolpur attended the Suri Farm.

In Bankura, two boys have been employed as practical labourers at the Government Farm for training in agriculture.

Distribution of departmental improved seeds in Western Circle.—This is given in a tabular form in Appendix II—Miscellaneous.

Jute forecast work.—This work was carried on as in the previous year by the District Agricultural Officers and the demonstrators, and no extra hands were employed.

In 24-Parganas causes of betel vine disease was investigated in 2 barojes at Bon-Hooghly and Birballavpara to find out remedies. In these places vines were planted after thoroughly sterilising the soil by turning, but so far no good effect is visible. The co-operative anti-malarial societies of Nimta and Kadihati did good work, and were supplied with seeds and manures free for introduction in the land reclaimed by them.

In Jessore departmental paddies, jute, sugarcane were grown at Samta, Nakful, Gadgachi, Narail, Kalora, Batikadanga Satrujitpur, Jhenidah and Kotchandpur by some private gentlemen to meet local demand for their respective seeds.

In Khulna investigations on betel vine disease has been taken up.

In Murshidabad the seed farm of Maharaja of Kasimbazar at Banjetia has made good progress. At Simulia Dr. Bamandas Mukerjee proposes to start an irrigation society for supplying water to irrigate a compact area of 300 bighas that suffers from drought if the scheme is remunerative. At Salar Munshi Ghulam Gaus, a zamindar and a raw bone merchant, has been given the details of a power driven bone disintegrator, and the matter is having his best attention.

In Howrah experiments with betel vine disease have been arranged in Santragachi and the results are awaited.

In Birbhum number of co-operative irrigation societies are increasing steadily, and there has been 50 such societies at work during the year.

In Bankura there are 100 registered irrigation societies which are doing good work.

R. DAS GUPTA,

Deputy Director of Agriculture,
Western Circle.

Names of crops.	24-Parganas.	Jessore.	Nadia.	Murshidabad.	Howrah.	Hooghly.	Burdwan.	Bankura.
	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.
C. G. jute	6 25 0	6 37 0	120 0 0	31 16 0	4 0 0	....	....	....
D. 154 jute	....	8 25 0	....	....	....	2 29 0	....	....
Kataktara	5 20 0	25 30 0	....	71 22 0	8 5 0	....	....	0 5 0
Dadkhani	....	....	....	....	....	....	....	1 1 0
Indrasail	3 0 0	50 0 0	....	5 0 0	2 20 0	....	....	3 14 0
Dudsar	....	....	....	1 0 0	....	....	....	....
Charnock	....	4 13 0	....	7 18 0	....	....	....	0 10 0
Saru aus	....	....	....	....	....	1 0 0	....	....
Nagra	....	....	....	....	1 10 0	....	....	2 4 0
Sugarcane *tanna*	10,000 0 0	32,000 0 0	5,000 0 0	62,210 0 0	6,000 0 0	....	....	10,000 0 0
Badshabhog	....	....	....	....	....	....	....	0 7 0
Pusa wheat No. 4	....	2 0 0	....	....	....	....	0 11 0	....
Gangajali	....	1 10 0	....	....	....	....	....	....
Darjeeling potato	....	75 0 0	....	28 0 0	....	....	....	....
Comilla *rahar*	....	0 7 8	....	....	....	....	....	....
Patnai peas	....	0 15 0	....	1 20 0	....	....	....	....
Castor-cake	....	....	....	40 10 0	25 0 0	....	....	3 35 14
Groundnut	....	....	....	....	1 0 0	....	....	....
Dhaincha	....	....	....	....	1 0 0	....	....	....
Bonemeal	....	....	....	....	20 0 0	....	....	....
Nitrate of Soda	2 28 0	....	....	....	6 0 0	....	....	....
Superphosphate	1 20 0	....	....	....	3 0 0	....	....	....

Appendix II.

Departmental seed supply statement in Western Circle, 1925-26.

Name of seed.	24-Parganas.		Jessore.		Nadia.		Murshidabad.		Howrah.		Hooghly.		Burdwan.		Banknra.	
	Indent received.	Quantity supplied.	Indent received.	Quantity supplied.	Indent received.	Quantity supplied.	Indent received.	Quantity supplied.	Indent received.	Quantity supplied.	Indent received.	Quantity supplied.	Indent received.	Quantity supplied.	Indent received.	Quantity supplied.
	Md. sr.	Md. sr.	Md. sr.	Md. sr.	Md. sr.	Md. sr.	Md. sr.	Md. sr.	Md. sr.	Md. sr.	Md. sr.	Md. sr.	Md. sr.	Md. sr.	Md. sr.	Md. sr.
C. G. jute ..	71 30	6 25	30 0	6 37	1,030 0	120 0	..	31 16	..	4 0	..	1 34	1 0	..	..	..
D. 154 jute ..	20 10	..	2 0	8 25	..	..	..	..	2 20	..	..	..	0 10	..	..	..
Kataktara ..	40 20	5 20	..	25 30	..	..	60 0	71 22	..	8 5	10 0	..	1 15	..	0 20	0 5
Cl.arnock ..	..	..	..	4 13	..	..	20 0	7 18	..	..	..	1 0	0 15	..	0 20	0 10
Indrasail ..	147 20	3 0	2 0	50 0	..	..	10 0	5 0	..	2 30	15 0	..	0	..	1 0	3 14
Tanna or C. C. sugar-cane-cuttings.	..	10,000 0	..	32,200 0	..	5,000 0	..	62,210 0	..	6,000 0	..	..	..	..	..	10,000 0

APPENDIX VII.

Annual Report of the Deputy Director of Agriculture, Northern Circle, for the year 1925-26.

Charge.—The charge of this circle was held by Mr. Jadu Nath Sirkar from 1st April to 26th November 1925, by Rai Sahib Jamini Kumar Biswas from 27th November 1925 to 14th March 1926, and by me from 15th March to the close of the year.

Tour.—Mr. J. N. Sirkar spent 81 days on tour, Rai Sahib 61 days, and I was on tour for four days.

Staff.—There was no variation in the officers under whose charge the many farms remained during the year, except at Bogra, where owing to the untimely death of the District Agricultural Officer, Babu P. N. Sen Gupta, changes were necessary, and Babu A. M. Das was succeeded by Maulvi Mahammad Hossain Ali and finally by Babu Bhabesh Chandra Roy; at Pabna, Babu N. Dev was followed by Babu S. K. Dutt and at Malda Babu K. K. Lahiri by Maulvi Fakrul Islam Wahid. Babu Atal Behary Sen continued to remain in charge of the Rangpur Cattle Farm, except for a short period when he went to Bangalore for training in animal husbandry, Babu Rebati Mohan Roy officiating during his absence. Babu Digendra Nath Banerji, Jogendra Chandra De, Babu Jogesh Chandra Ray, Babu Mohini Mohan Ghosh and Maulvi Abdul Wahed Molla remained in charge of Rangpur district and demonstration farm, Jalpaiguri, Dinajpur, Rajshahi and Nator respectively.

It is with great regret that the department lost a good and conscientious worker during the year under report in Babu P. N. Sen Gupta, who died at the Bogra Farm on 22nd December 1925.

There was no great change in the hands and number of subordinate staff on the farm and in the districts. In all, there were three Assistant Farm Superintendents, six Overseers and 23 demonstrators at the beginning of the year, and during the course of it, three more demonstrators were allotted to this circle, being one extra at each of the districts of Dinajpur, Jalpaiguri and Malda.

Character of the season.—The weather, in general, was unfavourable to *kharif* crops. On account of heavy rainfall in the beginning of the year, jute, *aus* paddy and sugarcane suffered much in Rangpur, Dinajpur, Bogra, Malda and Rajshahi. In some places, jute and *aus* paddy were resown, but as this was done late, the result was not satisfactory. The *rabi* crops however were not such a failure. All transplantation of *aman* paddy was done under normal conditions, but absence or insufficiency of rain in November checked the growth. Pulses and oil seeds too suffered on account of heavy rains later in the season. In Bogra the oil-seed crops were also attacked by insect pests.

Agricultural stations and farms.—There are five farms in full running order in this circle, the most important being the cattle farm at Rangpur and next in importance being the demonstration farm at Rajshahi. Besides these there are demonstration farms at Rangpur, Bogra and Pabna. The two new farms at Dinajpur and Mainaguri have just started doing work. At both of these, some paddy was grown by bargadars during the year under report as they were not under the control of the department for the whole year, the Dinajpur Farm buildings being handed over in September 1925, while those at the latter place were not handed over by the end of March 1926.

The tobacco farm at Burirhat is under the direct control of the Agricultural Chemist to the Government of Bengal, Dacca.

Apart from the above, there are District Agricultural Officers posted at Malda and Nator (Rajshahi Division), the former being in charge of the district and the latter of two subdivisions (Nator and Naogaon) of Rajshahi district.

It is expected that the construction of buildings for the Malda Farm will be taken up by the Public Works Department during the next year. With the completion of this, the Northern Circle consisting of Rajshahi Division will have one farm at least for every district which is a happy sign of the times.

Though the attention of the department is chiefly concentrated on the Government farms, they are not the only farms under its control, the private farms, the Khas Mahal and Wards Estate farms being also under the guidance and partial supervision of the department and its officers.

Rangpur Cattle Farm.—The central cattle farm of the department at Rangpur continues to do good work. The details are given separately in this report.

As the experiment of simultaneous serum inoculation carried out last year on 101 head of cattle proved very successful, it was continued this year, and 129 heads of cattle, *i.e.*, all the rest of the farm herd were inoculated against rinderpest. There was an outbreak of the disease in the country this year and many cattle were swept away. Some calves on the farm too got infection before the inoculation was done, but prompt action saved the situation, and the inoculation of the whole herd has now made it immune to this disease. The operation was successfully carried out in February 1926 under the personal supervision and care of the Veterinary Adviser to the Government of Bengal to whom the department is much indebted.

The public of Bengal who own cattle in any number are particularly enjoined to take advantage of this protection against an infection that causes great loss every year. The Veterinary Department will be glad to render any help those who require it.

A meeting of the Selection Committee was held on 13th June 1926 and 87 cattle (cows, bulls, heifers and calves) were cut out and sold by auction as they fall short of milk yield standard or standard weight or had foreign blood in them that was undesirable or were too aged. A herd of Tharpakar cattle has been kept on the farm for some time; but as it did not inspire much hope and continued to give unsatisfactory results, it was decided to abandon it from this farm. This herd was sent to the Dacca Central Farm during this year.

During this year seven breeding bulls were supplied to Government or private farms or District Boards and five pairs of draught bullocks to Burirhat Tobacco Farm and Rangpur Demonstration Farm from the stock of the cattle farm.

In the cultivation section of this farm, maize, *juar* and cowpea were grown during the *kharif* season and oats and peas during *rabi* season for fodder for the herd. Japanese millet failed in *rabi*. It is being grown in *kharif* next year. Guinea grass supplies a good quantity of green fodder which the cattle relish. An extensive area will be put under this next year. *Juar* and maize were also chaffed for making silage and, in fact, but for silage the feeding of the herd during some portion of the year would have been a problem. It is recommended that all stock owners and larger cultivators should build *pucca* siloes to preserve fodder for their cattle. If the sub-soil water level is low enough in highlands, such silos could easily be constructed in the form of pits when the cost of making would be considerably reduced.

Burirhat Tobacco Farm.—The tobacco farm at Burirhat, situated little over five miles from town, remained in charge of a Farm Superintendent under the guidance of Rai Sahib J. K. Biswas and the administrative control of the Agricultural Chemist to the Government of Bengal. The Deputy Director of Agriculture, Northern Circle, visited the farm on occasions to see that the work was progressing according to the instructions given. The detailed report of this farm will be found separately and amalgamated in that of the Agricultural Chemist to the Government of Bengal.

District demonstration farms.

(1) *Rajshahi Farm.*—Babu Mohini Mohan Ghosh remained in charge of the farm all the year. This is by far the most important arable farm in this circle, not only for the large area under cultivation but also for the fact that it is a fairly representative farm and many important and interesting experiments are being done here.

Almost all crops are grown at the Rajshahi Farm, which has a total area of 63 acres, the most important being sugarcane, yellow *tanna* and C. O. 213, both of which gave high yields during the year. *Indrasail* paddy was grown for propagation and other manurial experiments of the Agricultural Chemist were done with winter paddy and sugarcane. The Java system of cane propagation has not given satisfactory results here, and accordingly it has been abandoned.

Two tanks were dug on the farm for retting jute. Crops grown on economic basis have continued to show profit. Another interesting feature of this farm is the poultry. The Superintendent is making a success with Rhodes Island Reds and the eggs of the breed are eagerly sought after by the public for laying.

(2) *Rangpur Farm.*—Babu Digendra Nath Banerji was in charge of this farm throughout the whole year. Experiments with paddies, jute, fodder crop

and other miscellaneous crops were done under the instruction of the expert officers and the Deputy Director. *Kataktara aus* has now fairly established its superiority over local *aus* varieties. It has given higher yield over Chapalo and Sonamail successively for six years. *Indrasail* on one plot gave as much as 30 maunds of grain per acre. Thus it has a fair claim to being widespread. Propaganda work being done in this respect.

Another half acre of lowland plot was reclaimed this year and put under transplanted paddy.

All plots kept under economic basis gave good profit. *Indrasail* gave a profit as much as Rs. 61-8 per acre. Sugarcane unfortunately gave a small loss owing to bad weather conditions and untimely heavy downpour, causing water-logging. These were the factors over which human agency had no control.

(3) *Bogra Farm.*—There were many changes of hands during this year at the Bogra Farm, and finally it was under Babu Bhabesh Chandra Roy from 18th March 1926. The soil of the farm is typical of the district, *i.e.*, heavy "Khear" land which is only good for paddy generally. Sugarcane has successively been a failure. This year's crop was a stunted one on account of water-logging after heavy rains during the later stages of growth. It also suffered from the "borer". The rainfall, though about normal in total, was uneven, and this resulted in sufferance of fodder crops, cotton and *rahar* generally.

The proposed small farm on the alluvial tract on the other side of the Karatya River mentioned in last year's report has not yet been taken in hand.

Manurial experiments gave good results, sodium nitrate having proved beneficial to *Kataktara* and a mixture of sodium nitrate and cowdung were successful with *juar*.

Irrigation was done on the tobacco plots. The *Skene* water lift will be tried here.

All crops grown on economic basis show good profit, the chief being DI, a variety of *aman* transplanted paddy which gave a profit of Rs. 163 per acre.

Full details will be found under the farm reports. Cooly shed have been completed on the farm.

(4) *Pabna Farm.*—Babu Nirmal Dev in charge of the farm at the beginning of the year was followed by Babu S. K. Dutt, a senior District Agricultural Officer of the department.

Some 5 acres of land were reclaimed this year, a tank for retting jute excavated and a cooly shed constructed by the Public Works Department during this year. This farm did not suffer much from the inconsistency of rains. On the contrary the January rains helped the *rabi* crops. A storm in September, however, caused some damage to the standing sugarcane crop. The total amount of rain was deficient than the normal by 12¼ inches.

(5) *Dinajpur Farm.*—The main work at this farm was the construction of buildings by Public Works Department and the reclamation work done under the supervision of the department. Some *Indrasail* was grown by *borga* system. The buildings were handed over in September 1925, and some reclamation, *i.e.*, levelling of certain plots still remain to be done. It is expected this will be completed next year. Babu Jogesh Chandra Roy remained in charge the whole year.

(6) *Mainaguri Farm.*—The main work on this farm too was the construction of buildings by Public Works Department, which were not handed over by the close of the year under report. Some reclamation work consisting of making roads and drains was done under the supervision of the department in February and March 1926 as the sanction for same came late. A little reclamation work now remains to be done next year. A plot of land was given to bargadars for cultivation, and thus a large quantity of paddy and straw was obtained. Babu Jogendra Chandra De remained in charge throughout the year with his headquarters at Jalpaiguri. He will come to live at the farm as soon as the buildings are handed over when cultivation by the department will start.

Mainaguri is a place where there is a high rainfall, and it rains incessantly for days together; but the farm land has types of all lands.

District work and demonstrations.

The activities of the departmental officers in the district are chiefly concerned with the introduction of new crops, distribution of improved seeds and arranging demonstrations on the cultivators' lands.

The improved varieties of departmental seeds continue to grow in popularity so much so that the people are realising the importance of preserving their seed both for their own use in the coming year and for sale. In this way, the *Kataktara aus* and *Indrasail aman* paddies, C. G., D. 154 and *Kakya Bombai* jutes, particularly the former, on account of its high yield of fibre, yellow *tanna* sugarcane are becoming more and more popular and are automatically spreading in the country.

No free distribution of seed is allowed by the department, but facilities are afforded for the procuring of good seed, most of which are supplied from district farms through the agricutural demonstrators.

A statement showing the quantity of various seeds distributed by the department is given below:—

	Kataktara.	*Indrasail.*	C. G.	D 154.	K. B.	Y. *tanna.*	C. O. 213 Dl, Dll, D5	Dudsar.
	Md. sr.	Md. sr.	Md. sr.	Md. sr.	Mds.			Md. sr.
Jalpaiguri ..	..	30 0	..	..	40	30,000	2,500	..
Dinajpur ..	34 0	56 0	..	..	40	40,000	..	..
Rangpur ..	7 0	75 0	..	..	75	2,000	..	1 0
Bogra ..	7 7	..	2 0 0 28	2 0 6 10	..	3,500	1	110 29
Rajshahi ..	..	62 32	21 15	7 21	..	On 12 bighas.		
Nator and Naogaon.	7 0	7½ 0	10 0	4 0	6½	50,000	..	..
Pabna ..	..	..	4 0	..	29	4,500	..	..
Ma'da ..	..	..	..	..	25	28,000	..	100 0

It is gratifying to note that private persons and those connected with the Khas Mahal or Wards Estates have taken up experimental work in good spirit, and are trying to grow the departmental seed to satisfy themselves of high yielding capacities possessed by such seeds under favourable soil and weather condition, and once having convinced themselves of it, are helping in their dissemmation. It is, of course, very difficult with the means at the disposal of the department to gauge the full expansion of departmental seeds.

The introduction of new crops is a work which, under the condition met with the country, has, perforce, to be a slow process. The cultivators, in general, want something which will furnish them with food, grain and their cattle with fodder and with the very small areas they have, it is almost impossible for them to grow crops of which they do not fully realise the importance of the utility. Consequently, all their attention is concentrated to two crops—the first, paddy that furnished staple food to them and a poor fodder for their cattle and second the jute which is risky owing to market fluctuation and which if grown and conditions are favourable furnishes them with some return in money to supply other needs of the family.

Attempts have been made and at places with success to introduce Pusa wheat, potatos, grain, tobacco, groundnut, sugarcane fodder crops, such as *juar*, maize, and Japanese millet, where such are not grown. *Dhaincha*, cowpea, land *rahar* have been grown in some districts as green manure.

But the work of demonstration of improved crops and the introduction of new ones is not so thorough as it ought to be, owing to paucity of staff, particularly the demonstrators. In many districts, such as Jalpaiguri, Dinajpur and Nadia there are no demonstrator of the department outside district headquarters. The retrenchment was heaviest among demonstrators, and it is desired that not only should the old number be soon employed but increased to enlarge the useful work of a development department. A demonstrator's area of work being 5 miles radius around his headquarters, he would not be able to accomplish much considering the area of the whole of the subdivision which is not approached at all.

Private farms.—Apart from the work at the district farms, there are other farms belonging to individual owners or to bodies which are none—the less

doing very useful work of growing of improved varieties and the spread of seeds. Thus they serve as seed farms and seed stores as well. These are visited by the officers of the department as time permits and advised with regard to their cropping schemes or other difficulties arising in their work.

A list of such farms was given in the last year's Annual Report in addition to which the following may be noted which were either started during this year or came in contact with the department:—

District.	Subdivision.	Situation.	Owner.	Area (bighas).
Jalpaiguri	Sadar ..	1. Sarugram ..	Babu Tarini Prasad Roy.	
		2. Khoorbari	Babu Girindra Mohan Bose.	
		3. Falakata ..	Babu Joy Singh.	
		4. Pokhria (Alipur Duars).	Ditto.	
		5. Ambari Falkata.	Babu Chhagmal Agarwala.	
		6. Beharapara	Babu Kamini Kumar Rahut	
Dinajpur	Ditto ..	7. Parvatipur	Janbazar Ward's Estate ..	½
		8. Kazipur ..	Babu P. M. Maitra ..	40
		9. Bahai ..	P. C. Roy Chaydhuri ..	12
		10. Khalkuli ..	N. C. Sen ..	20
		11. Kazipur ..	S. K. Sur ..	20
		12. Chandpur ..	Janbazar Estate ..	15
Rangpur	Ditto ..	13. Deuti ..	P. C. Chakraborty ..	12
		14. Chilmon ..	N. C. Roy Chaudhuri ..	7
		15. Kamalkachna	S. C. Lahiri ..	2
		16. Dhap ..	Ram Pada Ghatak ..	8
		17. Burirhat ..	Md. Golam Gaus ..	12
	Nilphamari	18. Sadar ..	Nani Babu ..	400
	Gaibandha ..	19. Chandia ..	Babu Rameswar Majumdar	35
Bogra ..	There are about 20 farms growing departmental crops with an area of 2 cottas to 2 bighas.			
Rajshahi	Sadar	20. Puthia ..	Raja Naresh N. Roy.	
		21. Bongram ..	Babu Sarat Chandra Roy.	
		22. Aliganj ..	Babu Bhuban Mohan Roy.	
	Natore ..	The following are the two new farms in addition to those reported last year:—		
		23. Arjunpur ..	Md. Rajabali Mia.	
		24. Baidya Belgharia Seed Farm.		
Pabna ..	Sadar ..	25. Salgoria ..	Chakraborty Brothers' Agricultural Farm.	
		26. Pakuria ..	Bengal Agricultural Commercial Co., Ltd.	
Malda ..	Ditto ..	27. Krishtobhoga	Babu Kishori Mohan Singha	

Some of those farms perhaps require a special mention for the splendid work they are doing. (1) In the Jalpaiguri district the Government Khas Mahal jotdars fund has been started from which some small farms have been financed. Almost all of them have reserved special areas—though small yet—for growing departmental seeds for propagation.

(2) Jan Bazar Ward's Estate II has a demonstrator at Parbatipur, who personally supervises the seed store and the small farm. This seed store is doing very good work in spreading departmental seeds.

(3) Nani Babu of Nilphamari has a farm of 400 bighas, which is mostly devoted to jute, and D. 154 is becoming greatly popular in Rangpur district.

(4) The Bhaturia Farm in Nator belonging to Khan Bahadur Maulvi Md. Ersad Ali Khan Chaudhuri with an area of 30 bighas is run efficiently. This year it used 5 bighas under yellow *tanna*, 6 bighas under *Indrasail*, 6 bighas under D. 154 and 3 bighas under Turmeric.

(5) At Lakshmipur the Kholabaria Farm of Maulvi Md. Jahangir Khan Chaudhuri of Nator, started last year, has an area of 160 bighas, of which only 40 bighas have yet been put to the plough. *Indrasail* was grown against local *aman* and gave better yielded with an outturn of 12 maunds per bigha—a very good result. Next year larger area will be put under *Indrasail* here.

(6) At Baidya Belgharia 5 miles from Nator, Dr. Akshoy Kumar Sen has started a farm, and is growing mainly the departmental seed of paddy.

(7) Another farm has been started at Lakshmipur, owned by Babu Purna Chandra Biswas, with an area of 160 bighas, of which 40 were under jute and 20 under local *aus* and *aman* paddies, including two bighas under *Kataktara*.

(8) At Malda the farm of Babu Kishori Mohan Singha has become a nucleus for the extension of *Dudsar* paddy. Regularly every year 100 maunds or more are sold off from seed farm here. This is setting a good practical example.

Khas Mahal and Wards Estates.—The work of the private seed farms is greatly supplemented by the above which, besides maintaining some farms, have their own seed stores run under guidance of the District Agricultural Officer of the districts concerned. As these are, more or less, under the direct or indirect control of the Collector of the districts, their help has been most valuable for driving the work on them.

(1) The Deputy Commisioner of Jalpaiguri has set apart rupees eight hundred to re-instate khas mahal work stopped on account of retrenchment. This is intended to be spent in the four tahsils, most of which will go for subsidising the purchase of improved seeds and some towards the starting of a small seed farm.

(2) Jan Bazar Raj has a wards estate at Nabra a few miles from Parbatipur (Dinajpur district).

(3) In Wards Estate of Maharaja Kassimbazar (Rangpur district) spent about Rs. 1,100, and distributed *Kataktara*, *Indrasail*, Darjeeling potato and jute seeds.

(4) The Karatya Ward's Estate of Mymensingh and Paikor in Bogra district distributed improved seeds.

Agricultural associations.—What cannot be done by enterprising individuals with resources, Khas Mahals and Court of Wards can, and is done by a body of persons forming themselves into agricultural associations; but, as is the rule with such organization, they flourish only so long as there is a moving spirit in them, and no sooner that moves away, all enthusiasm dies and the organization remains in a moribund state. Such has been the condition of the Rangpur Agricultural Association, and it is hoped that with guidance of Mr. S. N. Gupta the enlightened Collector of Rangpur, who is its present Chairman, it will be brought to active life again. The association or rather its Secretary (Babu Ashutosh Majumdar) has, however, done some good work in the distribution of improved seeds and cuttings of yellow *tanna*. This year this association has been responsible for the distribution of a large quantity of jute seed, mostly K. B. the heaviest in Northern Circle.

There is no association in Jalpaiguri, and one is expected to be started next year. In the Dinajpur district there were four associations in a dormant state. The Collector Mr. J. De is taking keen personal interest, and has been successful in putting to life three rural associations. Attempts are being made at Nator (Rajshahi district) to start an association. In Pabna district the four associations at Nazirpur, Devettar, Dasuria and Barapangashia have continued their good work and have grown several recommended crops. The Malda District Agricultural Association has done much useful work in the year under report under the able and sympathetic guidance of its President Mr. J. Peddie, the Collector.

Jail gardens.—Jail garden attached to district jails in this circle were frequently visited by the District Agricultural Officers and occasionally by me, and the persons in charge of them advised in regard to the growing of vegetables for the prisoners.

Agricultural Exhibition and Fairs.—During this year, exhibitions were held at (1) at Nekmurd (Dinajpur district)—a big cattle fair was held in April 1926 where thousand of cattle changed hands. The Collector arranged a show of departmental varieties of crops which was very successful.

(2) At Cooch Behar a very successful Industrial and Agricultural Exhibition was held where departmental exhibits were shown and demonstration of cream

and butter making were given. Besides these improved implements such as ploughs and winnowers were shown. The two stud bulls of the Rangpur Cattle Farm were a centre of great attraction. All these were in charge of the District Agricultural Officer, Rangpur. The exhibition was financed by the Cooch Behar State.

(3) At Bogra a similar exhibition was held in March where seeds of improved races were shown and a demonstration of the work of Plannet Junior Hand hoe given. The District Agricultural Officer gave a talk on the advantage of green manuring.

(4) At Rajshahi on the farm of Babu Sarat Chandra Ray, an Agricultural Exhibition was held during the visit of His Excellency Lord Lytton to that place. There was also a cattle and poultry show which attracted many people. Prizes were given away for good stock and other exhibits. But this not enough. Time is when increasing interest should be taken by agricultural associations and District Boards and one exhibition held yearly at the district headquarters A visual demonstration with the impetus of a prize to be won has a wonderful Psychologic effect on the minds of the cultivators.

Agricultural Education.—The only kind of education that is possible to be given in practical training to sons of cultivators on the district farms. The boys work like average labourers and get paid for their work, thus they learn better method under the supervision of the District Agricultural Officers while actually doing work. In this way there were one or two on each of the following farms: Rangpur Demonstration Farm (1), Rangpur Cattle Farm (1), Pabna Farm (2), Bogra Farm (1), Rajshahi Farm (2).

Apart from this, agriculture is taught to the boys of Barapanshi High English School, Pabna, independent of the department. They have an area of 3½ bighas for practical training. Arrangements are also being made to teach agriculture to the boys of Pakshey High English School.

Merits of officers.—Babu Mohini Mohan Ghosh, Farm Superintendent, Rajshahi Farm, worked satisfactorily. The department suffered an irretrievable loss by the death of Babu Pramatha Nath Sen Gupta, the efficient District Agricultural Officer, Bogra. Babu Jogendra Chandra De, District Agricultural Officer, Jalpaiguri, and Maulvi Abdul Wahed Molla, District Agricultural Officer, Nator, worked energetically and creditably in their districts. Babu Digendra Nath Banerji, District Agricultural Officer, Rangpur, is an honest and sensible officer. His propaganda work with that of Maulvi Abdul Wahed Molla surpassed that of others. Babu Atal Behari Sen, Farm Superintendent, Cattle Farm, has worked zealously. Babu S. K. Dutta, District Agricultural Officer of Pabna, is a senior officer and knows his work and responsibilities. Maulvi Fakrul Islam Wahid, District Agricultural Officer, Malda, came to this circle in November 1925 and was confirmed from 23rd December. He has shown energy and hard work. Babu Bhabesh Chandra Roy at Bogra is yet new to his work, and Babu Jogesh Chandra Roy is just starting the farm at Dinajpur.

Acknowledgment.—Thanks of the department are due to Mr. J. Peddie, Collector of Malda, who has been taking keen interest in the welfare of agriculture of his district. Syed A. Salik, Collector of Bogra, Mr. S. N. Gupta, Collector of Rangpur, deserves special mention for their interest in furthering the welfare of the agriculturist and help the department greatly. Babu Aswini Kumar Maitra, Manager, Khanjanoor Khas Mahal (Bogra), took special care in the management of the small seed farm there.

A. R. MALIK,

Deputy Director of Agriculture,
Northern Circle (Offg.).

APPENDIX VIII.

Annual Report of the Chinsura Farm for the year 1925-26.

Location and area.—The farm is 3 miles away from the Chinsura Civil Station and lies to the west of the East Indian Railway line between Chinsura and Hooghly Station. It has an area of 210 acres, and is about 38 feet above the sea level.

The object of the farm.—It was started in the year 1908 for agricultural research and experiment with a view to find out (*i*) prolific and paying varieties of the staple crops, (*ii*) production of fine seeds of those varieties, (*iii*) for determining of suitable manures, best method of cultivation for each crop and introduction of labour saving appliances.

For the last two years certain areas of the farm have been cultivated on commercial lines to show that agriculture as a business is a paying proposition.

Charge and management.—Babu Hem Chandra Roy was in charge of the farm throughout the year, excepting a few days of casual leave in June and July. Other assistance available during the year may be seen from the statement below:—

Staff in 1924-25.		*Staff in 1925-26.*	
1. Chief Superintendent ..	1	Farm Superintendent ..	1
2. Farm Superintendent ..	1	Overseers	3
3. Overseers	3	Demonstrators	2
4. Clerk	1	Clerk	1
5. Two demonstrators for district work in Hooghly were attached to farm staff towards the end of the year.		Of the staff named above, full benefit could not be had for reasons of leave and transfer. Besides, the farm staff was called upon to do district work in addition.	

During the year under report, the officers were on tour as below:—

Babu H. C. Roy, Farm Superintendent ..	48 days.
Overseers	118 ,,
Demonstrators	31 ,,

Soil.—The level of the farm lands is of that intermediate grade which is a bit too high for *aman* paddy and a bit too low for high land crops.

The soil is a clay loam of alluvial origin, and does not respond to cultivation very readily. Fine tilth and close packing can therefore be obtained only when the soil is worked under proper moisture condition; any little excess or defect of moisture gives disproportionately bad results. It is, however, with the requisite supply of moisture, capable of returning good yields of paddy. The dearth of high lands and soils of different texture stand in the way of systematic work with different crops both *kharif* (summer) and *rabi* (winter).

Below is given an analysis of the soil and sub-soil:—

	High land soil No. 1A, Lab. No. 144.	High land sub-soil No. 1B, Lab. No. 145.	Block A soil No. 2A, Lab. No. 146.	Block B sub-soil No. 2B, Lab. No. 147.	Medium soil No. 3A, Lab, No. 148.	Medium sub-soil No. 3B, Lab. No. 149.	Low and soil No. 4A Lab. No. 150.	Low land sub-soil No. 4B, Lab. No. 151.
Insoluble silicate and silica	77·25	..	71·20	..	67·00	..	63·38	..
Combined water and organic matter (*a*).	5·29	..	5·05	..	8·33	..	0·59	..
Ferric oxide and allumina ..	14·77	..	20·14	..	21·48	..	22·84	..
Lime	·96	..	1·53	..	1·00	..	1·57	..
Magnesia	·31	..	·26	..	·55	..	1·75	..
Potash	·85	1·63	1·29	1·22	1·31	1·17	1·51	1·01
Sodium	·55	..	·39	..	·29	..	·27	..
Phosphoric anhydride (*b*) ..	·02	·15	·12	·10	·06	·12	·09	·12
Total ..	100·00	..	99·98	..	100·00	..	100·00	..
(*a*) Containing nitrogen ..	·09	·073	·091	·088	·091	·064	·134	·122
(*b*) Containing phosphoric anhydride soluble in 1 per cent. citric acid solution.	·014	..	·016	..	·005	..	·007	..

Irrigation.—The farm is dependent on seasonal rainfall for its main crop paddy. It is seriously affected by late rainfall and short season. Indeed in years of bad rainfall, as in the present year, portions of farm lands cannot be brought under cultivation for want of the requisite supply of moisture.

There is an old engine and a small petrol pump for lifting water for irrigation. But none of the officers of the farm is trained in the use of engines. This, combined with the condition of the engines, results in that the work got out from these engines is not at all satisfactory. The primary question however is source of supply of irrigation water. The proposals of deepening of the *jhils* in "C" Block and "D" Block along with formation of high lands, requires immediate consideration. The proposal of the tube well for which funds were allotted in 1922-23 should be revived for the requirements of the farm as well as for investigating the possibilities of a tube well as a source of irrigation water.

Drainage.—The presence of comparative high lands in north and south, the railway line to east and the silted up Saraswati River to the west make drainage of the farm, in cases of a heavy downpour a serious problem. The first sowings of *rabi* crops this year were all damaged, because in spite of the best efforts on the part of farm staff effective drainage to save the crop could be done. The sowing on the "a" line in "A" Block could possibly be saved if there were some more pipes connecting the A Block with the ditch to the east of the central road.

Deepening the drain to the south of the farm with an outfall into the Saraswati was proposed to be effected under the Sanitary and Agricultural Improvement Act. But the Act may not be brought to bear on the project as there are no other neighbourers, except the farm likely to be benefitted by the work.

Deepening of the *jhils* will improve the situation providing storage reservoirs for the early showers.

Buildings.—The existing buildings on the farm are insufficient. There are no quarters for the Chief Superintendent. The accommodation provided in overseers' quarters is insufficient for a family man. Suggestions for their improvement were given in last year's report. The prevalence of illness among the Overseers is perhaps due to the insanitary condition of the houses they live in.

Under the present policy, demonstrators for propaganda work are also to stay on the farm, but there are no quarters for them.

Extension of the office building to find proper accommodation for the dispensary room and for preservation of records is urgently necessary. At present paper, kerosine, petrol are kept huddled in the same room which may result in a conflagration any moment.

A godown with floors a space of 35′ × 50′ and open implement shed for keeping ploughs and other heavy implements are urgently needed. A plan and estimate for the godown is pending sanction.

The window of the present godown have been a source of some worry and trouble. The Executive Engineer was consulted in the matter and iron bars are to be provided.

To prevent cattle trespass and for better protection of the farm, some thatched houses may be built in important places, and arrangement may be made for housing labourers in those sheds.

Labours.—The problem of labour here is as acute as ever. Local labour available, is practically nil, and the farm is dependent entirely on the emigrants. Their supply is uncertain, and they are available often at times when there is no great demand for them; on the other hand, if they are not taken in during slack season, there remains no chance of getting them during the busy season.

One of the solutions to the problem appears to be that the allotment under the head "Reclamation" should be communicated early, so that with the allotment under this head Santal or other emigrants may be kept employed till the cropping season is at hand. The difficulty with rate of wages is also being felt. Along with other contributory causes alleged high rates paid by the Calcutta Technological College who are in possession of the school needs investigation. Almost all through the year under report the farm suffered from insufficient supply of labour when labour was necessary.

Implements.—The following implements were purchased during the year under report:—

1.	Mould board ploughs	3
2.	Zigzag harrow	1
3.	Spring tooth harrows	1
4.	Handy Any cultivator	1
5.	Chaff cutter	1

Seven more mould board ploughs and at least two each of the cultivators are necessary for the smooth working of the farm.

One sugarcane crushing mill and two boiling pans have been purchased. There should be at least three mills and six pans.

Live-stock.—The year started with 49 bullocks, one bullock died, a second was transferred to Pinjrapole. There has not been any new purchase, so the herd now consists of 47 animals, of which two do not render any good service. It was noted in the last Annual Report that in view of the short plough season and absence of seasonable showers, 30 pairs of bullock should be the minimum for the farm.

(*ii*) **Bull.**—This year started with three bulls as below:—

1.	Sreekumar	Hisser country.
2.	Vikram	Montgomery.
3.	Country	Country.*

* Present from Mr. J. N. Gupta, I.C.S., late Commissioner of the Burdwan Division.

Vikram and the country bull have been transferred to Suri and Burdwan farms respectively.

There has not been any serious trouble with the animals, except Yoke Gall.

The proposal of regular and periodical visits of the Veterinary Assistant Surgeon is still under consideration and order.

Character of the season and rainfall.—The season had been the worst experienced since the establishment of the farm.

It was bad all over, both in the total quantity of rain received and in its distribution. Up to the end of June, the rainfall was about normal, but good showers were very few and far between. Rain failed in July, August and September. But there were heavy showers in October attended with high winds. From the middle of October down to the first week of January there was little or no rain:—

Month and year.	Number of rainy days.	Number of rainfall.	Average.	Recorded falls of over 1 inch.
April 1925	5	2·47	2·07	....
May „	8	4·67	5·50	2
June „	10	6·66	10·28	....
July „	21	9·09	12·02	2
August „	14	3·66	12·53	....
September „	12	4·65	8·83	1
October „	7	6·66	3·92	2
November „	1	0·02	0·59	....
December „	....	....	....	....
January 1926	2	1·52	0·36	....
February „	2	0·33	1·15	....
March „	11	3·84	1·28	....
Total	93	44·57	58·41	....

It may be seen from the above that there were nothing like monsoon showers —continuous heavy rain for days together.

The yield of *aus* paddy was very much affected, transplantation of *aman* paddy in bulk had to be abandoned. Jute was otherwise fair, but at the commencement of the harvesting suffered for want of steeping water. Sugarcane was on the whole good.

Insect.—Owing to absence of rain and practically no cultivation in the locality, many insects multiplied freely, and there was a sort of concentration of them on the farm. Principal among the insects were the Bihar hairy cater-pillar, jute semilooper, sugarcane stem borer, white ants, yellow beetles, stem and fruit borer on brinjal, aphis and caterpillar on English vegetables. Measures of control were adopted with success in cases, excepting of English vegetables and brinjals.

Operations done during the year.—

Name of crop.	Area in acres.
Sugarcane	2·365
Jute	4·850
Cotton	2·100
Rahar	1·980
Fodder	3·300
Sunn hemp	2·400
Aus paddy	7·130
Aman paddy	12·540
Vegetable	10·730 1·500
Gram	26·410
Khesari	13·150
Peas	2·000
Wheat	1·530
Linseed	1·260
Plantain	2·100
Total	85·345

Commercial cultivation.—It has now been accepted as a matter of policy that all the departmental farm along with conducting experiments and demonstrations in improved varieties of crops shall have a section on which cultivation will be done on strictly business principle to demonstrate that agriculture as a profession is paying. In pursuance of the above, 4·75 acres of land were proposed to be put under jute, 2·0 for fibre, 2·75 acres for seed to show a clear margin on the cost of cultivation thereof. The lands for jute were given the first plough as soon after harvest of the preceding crop as was possible. This was followed by occasional ploughing not exceeding six in any case for suitable and right kind of preparation for sowing of jute. The manure applied in all cases was cowdung varying in individual plot from 50 to 100 maunds per acre. In consideration of the previous crop taken from the plot sowing was done in May. The first mulching was given by the first week of June, two weeding, including one thinning was completed within the first week of July. There was some trouble from insect, mostly the jute semilooper and the Bihar hairy caterpillar. As there who no spraying machine on the farm dragging of rope moistened in phenyle solution in the case of semilooper and hand picking in the case of Bihar hairy caterpillar were resorted to with success. Harvesting commenced in the middle of September. The fibre was ready for extraction towards the end of September. The detailed cost of cultivation and of yield may be seen from Appendix I.

Jute for seeds.—The operations done up to harvesting were the same as in jute for fibre. After harvest, the tops were cut off for seeds, the stalks being steeped for fibre.

The results may be seen from Appendix II.

Sugarcane.—The area under commercial sugarcane was 0.912 acres, and were distributed as below:—

CO. ·213	0·187
Tanna	0·687
Samsara	0·038

The lands were prepared by six ploughing, and was then laid out in small plots and made into ridges and furrows. Cowdung at the rate of 200 maunds

were applied at the time of ploughing, including that applied at the basis of the furrows, which were also worked with spade. Other manures applied were castor-cake and ammon. sulphate. Small dressing of sodium nitrate was applied in the case of late planted areas ("D X" area, the lease of which was relinquished by Messrs. Suttons & Sons in April 1925). Eight thousand and two hundred and seventy-two cuttings, including those for filling up gaps, were required. The plots were irrigated just after planting and received three to four irrigations; the crop in "D X" was given one irrigation in cold weather. There was a slight attack of borers and of white ants. Consequent on the October shower some of the canes got lodged, CO. 213 suffering more. Though the canes were raised and supported with bamboo struts, they did not regain their original vigour. The crop was harvested in February and March. The yield were as below:—

	Mds. sr. ch.
Co. 213	17 34 10
Tanna	30 12 5
Samsara	0 24 0

The distribution of *tanna* was 0·187 acres in "C" Block and 0·5 acre in "D X" (Suttons relinquished area). From the C Block *tanna* which was planted in normal time 17 maunds 34 seers of *gur* was obtained, whereas the "D X" area *tanna*, though above 2½ times larger in area, yielded only 16 maunds 18 seers 7 chitaks of *gur*. Late planting on the bulk of the commercial area together with loss in vigour sustained by the "C" Block crop and additional cost in raising the lodged canes resulted financially in a very small margin of profit.

The details of cultivation and the profit and loss account may be seen from Appendix II.

1. **Aus paddy.**—The year has been exceptionally bad for *aus* paddy. Economic Botanist's experimental crops could not be transplanted and seeds were collected from the seed bed. Even on the seed bed some of the varieties did not develop seeds. Details will be included in Economic Botanists' report for the year.

2. **Seed supply.**—The effects of unfavourable weather conditions were accentuated by the short supply of labours interfering with timely weeding. Crop failed on 1·87 acre. In the rest the stand of crop was very thin. A high percentage of undeveloped grain and chaff marred the yield. The result may be seen from the statement below:—

Name of crop.	Area.	Total cost.	Yield grain.	Straw.	Value.		Profit.	Loss.
					Grain.	Straw.		
		Rs. A. P.	Md. sr. ch.	Md. sr. ch.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
Kataktara	0·54	321 0 0	11 38 0	100 30 0	47 4 0	100 12 0	..	172 15 9
Charnock	0·33	20 14 6	3 28 0	7 0 0	4 13 0	7 0 0	0 14 6	..

Aus is hardly ever a paying crop, but it being the poor man's food and being the first thing to lay one's hand upon in case of total or partial failure of winter paddy, is indispensable in a scheme of practical cultivation.

3. For *rahar* and *aus* in mixture, please see under *Rahar*.

Aman paddy—*Experiment.*—The Economic Botanist's experiments with *aman* paddy for selection and trial which usually takes 7·0 acres were abandoned for want of sufficient and timely rain. The varieties were tried to be kept alive for next year's seed on 0·50 acre of land with artificial irrigation.

The details will be found in the report of the Economic Botanist.

Seed supply.—Transplantation of *aman* paddy was started in A Block with artificial irrigation, water being carried to the plots in three lifts by Done from the "AX" tank, in expectation of showers. It was also necessary to find work for the labourers who, if disbanded at that time, would not have been available in case of sufficient rainfall immediately after.

The rate of progress per day was 0·2 acre. As there was not sufficient rain and the cost tended to be higher and higher as the plots became more distant, and as there was no chance of the crops surviving without rainfall, the venture was given up. From the result below it will be seen that they did not survive:—

Name of crop.	Area.	Cost.	Yield		Value.		Profit.	Loss.
			Grain.	Straw.	Grain.	Straw.		
		Rs. A. P.	Md. sr. ch.	K. p. g.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
Aman nagra	2·38	245 11 3	1 38 15	The crop failed.				

There was some rain in September. Taking advantage of the showers, some transplantation was done at the time with the surviving seedlings in hopes of getting seeds for the main varieties of the paddy for the next year sowing The results have been as below:—

Name of crop.	Area.	Cost.	Yield.		Value.		Profit.	Loss.
			Grain.	Straw.	Grain.	Straw.		
		Rs. A. P.	Md. sr. ch.	K. P. G.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
Indrasail ..	2·36	137 2 9	7 9 0	1 10½	28 14 0	26 8 0	..	81 12 9
Nagra ..	·64	34 11 6	The crop failed.					

It may be seen from the above that practically the whole of the transplanted *aman* scheme had to be abandoned for want of seasonal rainfall. Those taken failed badly.

Low land broadcasted aman.—The whole strip of low land extending along the east of the "D" Block, which had fallen into a state of jungly waste, was tried to be reclaimed by frequent cultivation. Taking advantage of the dry condition they were in and to partly recover the cost of operations, the areas cleared were sown with *Indrasail* broadcast. The results have been as below:—

Area.	Cost.	Yield.		Value.		Profit.	Loss.
		Grain.	Straw.	Grain.	Straw.		
	Rs. A. P.	Md. sr. ch.	K. p. g.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
7·16	612 8 0	66 8 4	19 10 6	164 7 0	314 4 0	..	33 13 0

From the above figures, it will be apparent that had the season been a bit more favourable, the cost of cultivation in the low lands would have been repaid As it is, the cost of reclamation has been only Rs. 33-13 on 7·16 acres.

Jute.—The total area under this crop was 4·85 acres and distributed as below:—

1.	Fibre Expert's chlorosis experiments ..	0·10
2.	Jute for seed	2·75
3.	Jute for fibre	2·00
	Total ..	4·85

The results obtained may be seen from the part dealing with the commercial cultivation on the farm.

Sunn hemp.—The idea in growing sunn hemp was if it had any effect in keeping down weeds or in otherwise improving the soil for the *aman* crop. Sowing of the seeds was followed by a period of drought, which took heavy toll on the young germinated seedings. The crop was of thin stand. The results obtained have been as below:—

Area	..	2·40
Cost	..	Rs. 96-12
Yield	..	Mds. 3.
Value	..	Rs. 45
Loss	..	,, 51-12

NOTE.—The distance that sunn hemp had to be carried for retting is one of the causes for the high costs.

Though the results have not been convincing this year, it would appear that sunn hemp is one of the crop for the farm. That is to say, as the rainfall in the locality is rather uncertain, large areas may be sown with sunn hemp to be ploughed under in years of good rainfall, otherwise to be treated as a fibre crop.

Fodder.—Various fodder crops were grown by the Second Economic Botanist for seeds. Peru pulse was grown on an area of 0·83. The yield obtained was 27 maunds. Japanese millet was sown on 0·10 acre for seed multiplication. Germination of the seeds was not very satisfactory. One irrigation was necessary. Two and a half seers of seeds were obtained. The Guinea grass is being grown on an area of 0·10 acre. Owing to the very bad rainfall this year, the crop was not satisfactory. It was given one irrigation and some cowdung as a manure. It is just showing up. The site for Guinea grass does not seem to have been well selected—

Area	..	0·10
Cost	..	Rs. 22-8-6
Yield	..	Mds. 11-36.
Value	..	Rs. 6
Loss	..	,, 16-8-6

Silage.—*Juar* was grown on an area of 1·75; the yield however has not been quite satisfactory. One hundred and forty one maunds of green *juar* were harvested and was mostly put into pit silos, in some singly, in others mixed with Peru pulse. Two of the pits were opened. Excepting about a foot from the top, the rest of the stuff so kept was relished by the cattle. It appears therefore that in high embankment of tanks silage can be made with success towards the close of the monsoon. The results of *juar* cultivation are given below:—

Area	..	1·75
Cost	..	Rs. 60-7-3.
Yield	..	Mds. 141.
Value	..	Rs. 70-8
Profit	..	,, 10-0-9.

Cotton.—The Second Economic Botanist's experiments with the various kinds of cotton were conducted by the Second Economic Botanist.

Some of the promising varieties were grown for seed multiplication. These were Mirpur No. 2, Bengal No. 58. The final pickings have not been done.

The details of the experiment will appear in the report of the Second Economic Botanist.

Arhar.—*Arhar* was cultivated on 1·18 acre of land and distributed as below:—

(1) Selection	...	...	...	...	0·55
(2) Manurial	...	...	...	...	0·63

The accounts for (1) and (2) have not closed yet. The details of the experiment will appear in the report of the Second Economic Botanist.

Rahar in mixture with aus paddy.—*Rahar* and *aus* paddy were grown in mixture to determine the economic possibility of taking such mixture on suitable

lands. The results have been quite interesting as may be seen from the statement below :—

Name of crop.	Area.	Total cost.	Yield.			Value.		Profit.	Loss
			Grain *Rahar*, Rs. 6 per maund.	Paddy. Rs. 4. per maund.	Straw.	Grain.	Straw.		
		Rs. A. P.	Md. sr. ch.	Md. sr. ch	Md.sr.ch.	Rs. A. P.	Rs. A. P.	Rs A. P.	Rs. A. P
Rahar.. *Aus* ..	0 80	116 13 4	11 0 0	6 31 0	24 0 0	66 0 0 27 0 0	24 0 0	0 2 8	..

Sugarcane.—The area under sugarcane was 2·365 and distributed as below :—

1.	Irrigation experiment	0·20
2.	Cold weather irrigation	0·30
3.	Manurial experiment	0·50
4.	Propagation for seed supply	1·365
1.	Java method	0·15
2.	Commercial	1·015
3.	Preservation of varieties	0·20

The irrigation experiments are undertaken to determine how far it is possible to grow cane without irrigation after planting and how it compares with that grown with irrigation. Under the conditions prevalent here, the experiment, if strictly carried on, will result in certain failure of the crop on no irrigation portion. To avoid this, just enough water is given to keep the seedlings alive. Once they are established, the two portions are treated differentially. The results therefore are not convincing, specially in a year like this. The results are shown in statement III. It may be seen that on actuals 0·10 acre the outturns of *gur* obtained were—

	Mds. sr.
No irrigation	97 10
Irrigation	92 25

Cold weather irrigation.—The experiment was first undertaken in the year 1922-23 to determine the number of irrigations that would be necessary in winter for final growth and development of the highest percentage of sucrose in sugarcane. The scheme originally was no irrigation, one irrigation and three irrigations. From the year under report, the scheme has been revised and made no irrigation, two irrigations and four irrigations. There were some heavy showers in October, so no irrigation was necessary before November. The irrigations commenced to be given in the middle of the month and were continued at intervals of seven days in the case of four irrigations and at an interval of 15 days in the case of two irrigations. Owing to a shower of rain in the beginning of January, much of the results which would otherwise have accrued were lost. All the irrigation plots were practically reduced to the same level, and in fact, owing to high winds accompanying rain in January, the four irrigation plots suffered more in lodging. The experiments are conducted on ·05 acre plot in duplicate. On analysis four irrigation plots showed the highest percentage of glucose. No irrigation plots however gave the highest yield of *gur*. The results may be seen from statement IV.

Manurial experiment.—This is the fourth year of the experiment, which was conducted this year as in previous year on plots receiving a general dressing of 200 maunds of cowdung. This year the doses of the manures applied were doubled. The experiments were conducted on ·05 acre of land in duplicate, the idea being to determine a suitable manure for *Tanna* sugarcane on land typical in Chinsura Farm. The results of yield may be seen from statement V.

The results obtained from use of different manures in the first three years have not been very constant so far as the total outturn is concerned. The value of castorcake as a manure for sugarcane is evident. It gave consistent results during the first two years. It stood first in the third and fourth year. It would also appear that ammonium sulphate and nitrolim, if applied in larger doses, might give more effective results in increasing the yield of *gur*.

Propagation for seed supply—(*1*) *Java method of rapid reproduction.*—The object of the experiment is to secure the largest number of setts within the space of one year; 0·05 acre was planted as nursery; only about a third of the cane from the nursery were harvested and planted in 0·10 acre; but the final plot did not show up. Some cuttings however are expected in the middle of April. The account has not been closed yet.

(2) *Commercial cultivation.*—The object is to demonstrate the possibilities of sugarcane as a revenue, paying crop, but under the conditions prevalent here—mainly difficulties of irrigation due to want of early rainfall and ravages of white ants—though the yield obtained is fairly high, 80 to 110 maunds on actual of 0·1 acre—the cost of cultivation eats up most of the profit. Another aspect of its cultivation is to supply cultivators with good setts of high yielding variety of sugarcane. The results obtained may be seen from statement II. The details of cultivation are given in the portion dealing with commercial cultivation.

(3) *Preservation of varieties.*—There are over ten varieties of sugarcane remnants of the varieties, both indigenous and foreign, brought for the purposes of experiments. Some of these varieties, as has been found on analysis, contained a very high percentage of sucrose. Some others of these varieties are occasionally in demand.

The cost of cultivation and the results obtained are as below:—

Area.	Total cost.	Yield.		Value.		Total value.
		Gur.	Cuttings.	*Gur.*	Cuttings.	
	Rs. A. P.	Md. sr. ch.	No.	Rs. A. P.	Rs. A. P.	Rs. A. P.
·30	252 8 9	8 6 0	5,392	73 5 6	43 3 0	116 8 6

The crop suffered badly from attack of white ants. C. O. 213 was for the first time cultivated on any appreciable scale. The cane tillers wonderfully. The average yield of canes from actuals of ·10 acre was 80 maunds.

The practice of wrapping cane, believed to be a protection against lodging, induces attack of white ants and is proposed to be discarded.

Canes in the irrigation experiment plots which were planted in comparatively shallow trenches lodged more than those in the manurial experiment plots. The highest yield from the manurial series is 87 maunds 8 seers per acre on actuals of 0·10, that from the irrigation series is 110 maunds 20 seers. The spacing in the two series was 3 feet and 2½ feet respectively. Individual canes in the manurial plots were however better than those in the irrigation plots.

The improved ovens, as suggested in Agricultural Chemist's letter No. 1428-30, dated the 23rd October 1925, were tried. The results were as below:—

Juice.	Time of boiling (hours).	Weather conditions.
(1) Started with 6-20 added up to 11 mds.	8	Wind moderate south wind
(2) Started with 11 mds.	9½	Wind high.
(3) Started with 11 mds.	8½	Ditto.

The experiment was not further tried to expedite *gur*-making.

Rabi crops.—Gram, wheat, linseed, *khesari* and peas were grown during the *rabi;* excepting peas and *khesari,* none of the accounts have been closed.

Peas.—Peas were grown on 1·93 acre; the idea was to sell green peas and to utilise the vine as fodder. Owing to want of rain, *pod* formation was very meagre. From one plot green peas were sold and the vines fed to cattle. But the results

were not encouraging, so the other plot was kept to be harvested for grains. The results may be seen from the statement below:—

Area ..	.. 0·93
Cost ..	.. Rs. 48-12
Vine ..	.. Mds. 5-16-4
Sale of green peas	.. Rs. 7.
Value of vine.	.. ,, 2-12.
Total ..	.. ,, 9-12.

NOTE.—The crop was taken as a catch crop before sugarcane.

	Area.	Cost.	Yield.	Value of yield.	Loss.
		Rs. A. P.	Md. sr. ch.	Rs. A. P.	Rs. A. P.
Peas for seed ..	1·00	20 2 0	2 6 0	15 0 0	6 2 0

Khesari.—*Khesari* was sown on 14·15 acres, of which 3 acres failed through excessive rain in October. 2·91 acres were fed to cattle on plots—

Area ..	.. 11·15
Cost ..	.. Rs. 202
Yield ..	.. Mds. 75-24
Value ..	.. Rs. 37-12.

NOTE.—The crop was grown to cover shortage of straw due to failure of *aman* crops.

The yield does not include that from the areas fed to cattle. *Khesari* does not grow well, and like all *rabi* crops suffered for want of sufficient rain during their period of growth.

Plantain.—The total cost of the plantain garden, including work in the old garden and some new plantations, was Rs. 107-15. The sale-proceeds received up to the end of the year were Rs. 134-7-6.

Lemons.—The total cost of lemons was Rs. 3-1; the sale-proceeds received up to the end of the year were Rs. 44.

Papaya.—The cost of papaya—there are only a few trees—was four annas only. The sale-proceeds received up to 31st March were Rs. 3-5-3.

Vegetables.—Information regarding cultivation of English vegetables is often in request. These vegetables were therefore tried to be grown with seeds received free from Messrs. P. Pestonji Poocha and Sutton & Sons. Good seedlings were raised, which were mostly damaged by the continuous shower in the middle of October. As lands were already prepared, some seedlings were purchased to supplement the loss of seedlings. The difficulty with these seedlings was that they died out, varying from 40 per cent. in caulies and about 25 per cent. in cabbages. There was an attack of insects on the vegetables, for which tobacco decoction was applied. The few khol-rabis and buts which survived, attained a very good size and attracted admiration at the Chinsura Exhibition. Owing to difficulties of marketing, a very good price was not obtained.

Brinjal.—Brinjal was grown on 0·3 acre of land with purchased seedlings. Insect attack on this crop was very severe in all its stages of growth. Precautionary measures were taken from the very beginning, but with no result.

Brinjal is an important crop in the locality, and it is worth while to find some good varieties—both by selection from local ones and by importation of seeds of well-known varieties such as are grown in Mymensingh and at Keshabpur in Jessore.

Kumra.—*Kumra* has been planted on 1·50 acre of land; it is just coming to fruit.

Katwa danta.—*Katwa danta* was sown among sugarcane. The stuff was sent to market. As it did not sell there, it was kept for seeds. Eleven seers of seeds have been received. The price of the seeds at Rs. 8 per seer will be Rs. 88. It may sell at even a higher price.

The total cost of vegetables has been Rs. 245; Rs. 88 has been realised as sale-proceeds. Seeds of *Katwa danta* 11 seers, Rs. 88. *Palong* seed 4 seers at 8 annas per seer, Rs. 2. Seed of total value Rs. 90 is in hand.

The *Kumra* plants, over 600 in number, are in excellent condition; at 8 annas per plant, the cost will be more than repaid.

Miscellaneous—*Reclamations.*—Some areas have been raised and others filled up and levelled, making it fit for cultivation.

Visitors.—The distinguished visitors to the farm were Justice Sir. R. N. Chatterjee, the Commissioner, Burdwan Division, and the Officiating Collector, Hooghly. The Director, Assistant Director and myself inspected the farm frequently. The Economic Botanist, the Second Economic Botanist and Assistant Economic Botanist also inspected the farm. The Agricultural Chemist's Assistant came for analysis of sugarcane.

The inaugural meeting of the Sadar Subdivision Agricultural Association, presided over by the Subdivisional Officer, was held on the farm, on which occasion many Presidents of Union Boards and other gentlemen visited the farm.

Some European gentlemen from the Angus Jute Mills and representatives of Messrs. Ralli Brothers also visited the farm. One Anglo-Indian gentleman from the Nilgiris came and visited the farm.

Exhibitions.—Besides two successful exhibitions held in the district at Guptipara and Chinsura town, conducted by the farm staff, exhibits were sent for two exhibitions held in Burdwan, and one each in 24-Parganas, Nadia and Khulna.

As the farm is called upon to supply exhibits in so many places, it is desirable that there should be two sets of exhibits complete with entomological and other for circulation in the circle.

Counting of Bankura paddy has almost been finished.

Messrs. Sutton & Sons relinquished the area taken on lease by them.

The Calcutta Technological College is in possession of the school.

The total expenditure for the year has been Rs. 15,825-5-6 and total receipts Rs. 6,060. The financial statement is enclosed herewith.

R. DAS GUPTA,

Deputy Director of Agriculture,
Western Circle.

STATEMENT I.

Commercial jute for fibre.

Area.	Preparation.	Mulching and weeding.	Pest.	Harvesting.	Bundling and steeping.	Washing.	Bailing, etc.	Seeds.	Manures.	Total cost.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
2·00	64 10 0	41 13 6	1 8 0	19 15 0	40 5 6	57 13 0	9 5 0	6 0 0	6 8 0	247 14 0
				Jute for seeds.						
2·75	94 8 9	130 8 0	3 12 0	86 14 6	26 15 0	105 4 6	..	8 4 0	14 11 0	470 3 9

Abstract of profit and loss.

Name of crop.	Area.	Total cost.	Yield.		Value.	
			Fibre.	Seeds.	Fibre at Rs. 17 per maund.	Seeds.
		Rs. A. P.	Md. sr. ch.	Md. sr. ch.	Rs. A. P.	Rs. A. P.
Jute for fibres ..	2·00	247 14 0	39 14 11	....	669 5 9	....
Jute for seeds and fibres.	2·75	470 3 9	37 0 0	12 1 0 At Rs. 10 per maund.	370 0 0	541 2 0
Total ..	4·75	718 1 9	76 14 11	12 1 0	1,039 5 9	541 2 0

NOTE.—Total expected profit Rs. 752-6.

Statement II.

Commercial sugarcane—Detail of cost.

Plot Ref.	Area.	Preparation.	Planting.	Irrigation.	Mulching.	Pest.	Weeding.	Wrapping.	Earthing.	Cutting.	Manures.	Tying cane lodging.	Harvesting.	*Gur*-making.	Grand total.
		Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
C 11-15/f	0·174	38 14 0	5 3 0	3 15 0	14 9 6	0 4 0	3 2 0	10 9 0	7 4 0	26 14 0	14 15 0	12 13 6	12 11 0	34 10 6	186 13 3
C 9-12/e	·0238	38 11 3	3 3 6	4 1 0	15 12 0	0 3 0	..	9 13 0	6 14 0	17 10 0	10 8 9	3 2 9	8 1 0	37 14 0	155 14 3
D X ..	0·50	41 10 3	11 9 0	28 8 0	19 12 0	..	..	15 6 0	32 10 6	..	3 14 6	..	9 0 6	37 5 0	199 11 9
Total ..	0·912	119 3 6	19 15 6	36 8 0	50 1 6	0 7 0	3 2 0	32 12 0	46 13 0	44 8 0	29 6 6	16 0 3	29 12 6	109 13 6	541 7 3

Statement of yield and value.

Name.	Area.	Yield.		*Gur* at Rs. 9 per maund.	Value cutting at Rs. 8 per thousand.	Total value.
		Gur.	Cutting.			
C.—*Block.*		Md. sr. ch.	No.	Rs. A. P.	Rs. A. P.	Rs. A. P.
Tanna ..	·187	17 34 10	4,300	160 12 0	55 10 6	216 6 6
C. O. 213 ..	·187	14 3 14	6,944	126 13 6	34 7 0	161 4 6
Samsara ..	·038	0 24 0	900	5 6 6	7 4 0	12 10 6
Tanna DX. ..	·50	16 8 7	8,500	145 12 9	68 1 0	213 13 9
Total ..	·912	....	....	438 12 9	165 6 6	604 3 3

NOTE.—The total profit has been Rs. 62-12. It may be seen that from an area of 0·5 acre land, only 16 maunds 8 seers 7 chitaks of *gur* were obtained due to late planting.

STATEMENT III.

Sugarcane.

Irrigation versus without irrigation.

Serial No.	Area.	Total cost.	Actual weight.			Value.		Profit.	Loss.	Cutting.
			Cane.	Juice.	*Gur.*	*Gur* at Rs. 9 per maund.	Cutting at Rs. 8 per thousand.			
		Rs. A. P.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	No.
1. With irrigation	0·1	98 5 0	77 31 0	54 28 0	9 10 8	83 5 6	11 0 0	..	3 15 3	1,374
2. Without irrigation.	0·1	95 5 0	84 5 0	58 5 0	9 29 0	87 8 6	11 6 9	2 10 3	..	1,430
Total ..	0·2	194 10 0	..	..	18 39 8	170 14 0	22 6 9	2 10 3	3 15 3	..

Chemical analysis.

Serial No.	Cane.	Sp. gravity.	Sucrose.	Glucose.
1	*Tanna* cane with irrigation ..	1,063	13·61	1·59
2	„ „ without irrigation ..	1,065	13·42	1·64

NOTE.—The yield per acre on actuals of ·10 has been—

	Md. sr.
No irrigation	97 10
Irrigation	92 25

STATEMENT IV.

Cold weather irrigation.

Serial No.	Area.	Total cost.	Actual weight.			Value.			Profit.
			Cane.	Juice.	*Gur*.	*Gur* at Rs. 8 per maund.	Cutting.	Cutting at Rs. 8 per thousand.	
		Rs. A. P.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Rs. A. P.	No.	Rs. A. P.	Rs. A. P.
1. No irrigation ..	0·1	95 10 0	95 30 0	67 15 0	11 2 0	99 6 6	3,312	26 8 0	30 4 6
2. Two irrigation ..	0·1	90 12 6	101 10 0	68 13 0	10 34 4	97 11 0	4,172	32 4 0	40 2 6
3. Four irrigation ..	0·1	102 10 6	98 32 0	65 33 0	10 28 12	96 7 6	3,244	26 0 0	19 13 0

Chemical analysis (cold weather irrigation).

Serial No.	Cane.	Sp. gravity.	Sucrose.	Glucose.
1	*Tanna* cane with no irrigation (cold weather).	1,064·5	13·03	1·75
2	*Tanna* cane with two irrigations (cold weather).	1,063	13·20	1·87
3	*Tanna* cane with four irrigations (cold weather).	1,064·5	13·08	1·50

Yield per acre on actuals of ·10.	Md. sr. ch.
No irrigation	110 20 0
Two irrigations	108 22 8
Four „	107 7 8

Cost of irrigation in cold weather.	Rs. A. P.
No irrigation	....
Two irrigations	3 10 0
Four „	7 12 0

STATEMENT V.

1. Manurial experiment.

Name.	Area.	Total cost.	Actual weight.			Value.			Profit.	Loss.
			Cane.	Juice.	*Gur*.	*Gur* at Rs. 9 per maund.	Cutting.	Cutting Rs. 8 per thousand.		
		Rs. A. P.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Rs. A. P.	No.	Rs. A. P.	Rs. A. P.	Rs. A. P.
1. Superphosphate ..	0·1	66 10 0	80 8 0	47 5 0	8 38 12	80 11 6	916	7 15 0	22 10 6	..
2. Nitrolim ..	0·1	79 11 0	74 8 0	49 1 10	9 7 12	82 11 6	1,232	9 14 0	12 14 9	..
3. Castorcake ..	0·1	80 12 6	80 15 0	54 24 0	9 31 0	87 8 6	1,026	8 3 3	14 15 3	..
4. Pot. nitrate ..	0·1	88 7 0	63 6 0	45 20 8	8 8 4	73 13 9	1,166	9 5 6	..	5 3 9
5. Ammon. sulphate..	0·1	77 14 9	81 1 0	52 34 0	9 18 12	85 3 6	1,188	9 8 6	19 13 3	..
Total ..	0·5	393 7 3	..	..	45 24 8	415 0 9	..	44 4 3	69 11 9	5 3 9

2. Manurial chemical analysis.

Canes.	Sp. Gravity.	Sucrose.	Glucose.	Rate per acre.	Actual on ·10.	Value actual.
						Rs. A. P.
1. A. C.'s Manural castor ..	1.068	14·10	1·69	400 lbs.	40 lbs.	3 12 0
2. Ditto duplicate ..	1,068	15·19	1·28	super.		
3. Superphosphate ..	1,070	15·14	1·41	2 mds.	8 seers	1 9 6
4. Ditto duplicate ..	1,070	15·35	1·34	nitrolim		
5. Nitrolim ..	1,071	15·55	1·31	10 mds.	1 md.	5 0 0
6. Ditto duplicate ..	1,068	14·85	1·50	castor		
7. Pot. nitrate ..	1,067	13·88	1·64	3 mds.		
8. Ditto duplicate ..	1,073	15·15	1·28	Pot. nitrate	12 seers	2 10 3
9. Ammon. suplhate ..	1,069	14·47	1·45	2 mds.	8 seers	1 1 6
10. Ditto duplicate ..	1,067	14·30	1·34	ammon. sulphate.		

NOTE.—The manure applied was in addition to the standard dressing of cowdung 200 maunds. The difference in total cost is mainly due to the cost in *gur*-making due to bad weather conditions prevailing at the time.

Financial return showing the results of agriculture in Chinsura Farm for the year ending 31st March 1926.

Debit.

Heads of debits.	Amount of each sub-head. Rs. A. P.	Amount of each head. Rs. A. P.
1. Sale-proceeds in hand at the commencement of the year, viz., 1st April 1925 ..	96 4 0	96 4 0
2. (*a*) Value of last year's farm produce in stock at the commencement of the year ..	5,545 12 0	
(*b*) Value of purchased store and other raw materials of the previous year in stock at the commencement of the year ..	995 9 0	6,541 5 0
3. Amount of outstanding bills payable by the farm at the end of the year ..	85 8	85 8 0
4. Amount of unrealised sale-proceeds due to the farm at the commencement of the year ..	299 14 0	299 14 0
5. Value of tools and plants and other agricultural implements in hand at the commencement of the year ..	2,495 10 0	2,495 10 0
6. Amount drawn from the treasury during the year—		
(*a*) Pay and allowance of the staff ..	5,586 9 0	
(*b*) Wages of labourers	8,286 3 6	
(*c*) Contingencies to be shown under different sub-heads of the budget—		
(*i*) Purchase and feed of cattle ..	1,722 7 0	
(*ii*) Purchase of seeds, manures and implements	1,325 0 3	
(*iii*) Medical aid ..	189 15 0	
(*iv*) Railway steamer, etc., freight..	87 14 0	
(*v*) Office expenses and miscellaneous ..	1,094 1 9	
(*vi*) Botanical section	195 0 0	
(*vii*) Petty construction and repairs	48 12 0	
(*viii*) Reclamation	2,876 0 0	21,411 14 6
(*d*) Cost of stores, seeds, farm produce from other farms within or outside the province by adjustment or book transfer ..	Nil	
	30,930 7 6	30,930 7 6
Deduct—On account of capital expenditure—		
1. Reclamation ..	2,876 0 0	2,876 0 0
GRAND TOTAL ..	28,054 7 6	28,054 7 6

Credit.

Heads of credits.	Amount of each sub-head. Rs. A. P.	Amount of each head. Rs. A. P.
1. Sale-proceeds in hand at the end of the year ..	Nil	Nil.
2. (*a*) Value of farm produce in stock for sale and farm's use ..	2,252 12 0	....
(*b*) Value of the purchased stores and other raw materials in stock at the end of the year ..	1,085 6 6	3,338 2 6
3. Amount of outstanding bills payable by the farm at the commencement of the year ..	85 8 0	85 8 0
4. Amount of unrealised sale-proceeds due to the farm at the end of the year ..	5 14 3	5 14 3
5. Value of tools and plants and other agricultural implements in hand at the end of the year ..	3,189 2 0	3,189 2 0
6. Amount paid in the treasury during the year—		
(*a*) Amount credited in cash into the treasury ..	6,060 0 0	6,060 0 0
(*b*) Value of stores, seeds, etc., supplied to other farms seed depot within or outside the province by adjustment ..	Nil.	Nil.
	12,678 10 9	12,678 10 9
Excess of expenditure over receipts, *i. e.*, loss	15,375 12 9	15,375 12 9
GRAND TOTAL ..	....	28,054 7 6

Explanation for the loss—

(1) Failure of *aman* paddy, which in normal year occupies 90 acres, is the principal cause.

(2) Value of yield from 26·41 acre gram, value of yield from 1·53 acre wheat and value of yield from 1·26 acre linseed could not be included in 2 (*a*) of credit side as the gram is being harvested and wheat and linseed await threshing.

APPENDIX IX.

Annual Report of the Burdwan Farm for the year ending 31st March 1926.

Introduction.—The farm is situated about 4 miles south-east of Burdwan Railway Station. The total area of the farm is 35·29 acres. It was originally opened in the year 1885 and was owned by the Maharajadhiraja of Burdwan until October 1921, when it was made over to the Government for use as a district farm. In the past the farm crops have suffered a good deal from the ravages of stray cattle and wild boars, etc., for want of a fencing round the farm. The fencing has been taken in hand now, and it is hoped the work will be completed by the first week of April. There are no quarters for the District Agricultural Officer and the demonstrators. The work of building quarters should therefore be taken in hand at a very early date.

Object.—The object of the farm is to find out prolific and better paying varieties of crops and methods of cultivation and to demonstrate such crops and methods on a commercial proposition, and also to propagate pure seeds of improved crops for supply to outside people.

Establishment.—The farm is under the direct charge of the District Agricultural Officer who is assisted on the farm by 2 demonstrators. But in spite of there being provision for 2 demonstrators at the farm, the staff at the farm consisted of a single demonstrator for a considerable part of the year. Most of the Demonstrators, as a rule, are not good enough for any office work, hence all the office work for the district as well as the farm has to be done by the District Agricultural Officer single handed. Necessarily the time at the disposal of District Agricultural Officer for propaganda work has been curtailed thereby.

Rainfall and Character of the Season.—The season on the whole has been a bad one, the total deficiency of the rainfall for the year being over 12 inches. The season was quite fair for jute and sugarcane, but was rather bad for winter paddy.

The table below about the rainfall recorded on the farm from April 1925 to March 1926:—

Month and year.			Normal rainfall.	Actual rainfall.	No. of rainy days.
April	1925	..	2·20	3·27	9
May	,,	..	5·56	4·17	5
June	,,	..	10·70	6·70	13
July	,,	..	12·32	10·30	20
August	,,	..	11·49	7·09	17
September	,,	..	8·59	8·46	10
October	,,	..	3·93	4·08	6
November	,,	..	0·64	Nil	Nil.
December	,,	..	0·13	Nil	Nil.
January	1926	..	0·38	1·30	1
February	,,	..	0·89	Nil	Nil.
March	,,	..	1·24	3·15	5

Operations during the year.—The operations may be classified under the following 3 heads:

A. Experimental.

B. Commercial or Economic.

C. General.

A. **Experimental.**—The varietal experiments of the Economic Botanist with 6 different kinds of paddy, viz., *Nagra Indrasail, Kartiesal, Jhingasal, Dudkalma* and *Jatakalma*. There are 5 duplications of each variety on 0·95 acre each, thus the total experimental area being 1·5 acres. From the results it appears that *Nagra, Indrasail* and *Jhingasal* are the three best yielders.

A manurial test on sugarcane (1·0 acre) was carried out as follows:—

Nitrate of soda at 3 maunds per acre on 0·5 acre.

Superphosphate—1 cwt. per acre on 0·5 acre.

Cowdung—200 maunds per acre on 0·5 acre.

versus

Castorcake—15 maunds per acre on 0·5 acre.

Cowdung—200 maunds per acre on 0·5 acre.

The artificial manures proved to be the better manures as is evident from the yield of *gur* obtained, viz., 29 maunds 30 seers against 24 maunds 12 seers 8 chattaks obtained with the application of castorcake. Moreover the cost of artificial manures was less than half of the cost of castorcake, the respective cost of manures being Rs. 20-8 and Rs. 42-4.

A manurial test on potatoes (0·34 acre) was carried out as follows:—

Nitrate of soda—15 seers on 0·17 acre.

Superphosphate—20 seers on 0·17 acre.

Sulphate of potash—20 seers on 0·17 acre.

versus

Castorcake—4 maunds 2 seers on 0·17 acre.

The yield obtained with the application of castorcake, viz., 17 maunds 12 seers was greater than the yield obtained with artificial manures, viz., 13 maunds 13 seers.

B. **Commercial.**—The following crops were grown on an economic basis:—

(1) Nagra paddy—2·5 acres.

(2) Indrasail paddy—5·0 acres.

(3) Jute (total)—1·49 acres.

The results in detail are given below:—

	Rs.	A.	P.
(1) *Nagra* paddy—B Block—2·5 acres—			
Cost of seed	3	15	0
Cost of manure	0	0	0
Cost of bullocks	14	12	0
Cost of labour	116	1	0
Total expenditure ..	134	12	0
Yield—			
Grain—71 maunds 15 seers	285	8	0
Straw—6 kahan 1 pan	97	0	0
Total value ..	382	8	0
Profit	247	12	0
(2) *Indrasail* paddy—D Block—5·0 acres—			
Cost of seeds	6	9	0
Cost of manure (*Dhaincha* green manure)	7	14	0
Cost of bullocks	37	8	0
Cost of labour	226	12	0
Total expenditure ..	278	11	0

		Rs.	A.	P.
Yield—				
Grain—138 maunds 9 seers		552	14	6
Straw—11 kahan 10¼ pan		186	4	0
Total value ..		739	2	6
Profit		460	7	0
(3) (*a*) Jute—A Block—0·7 acre—				
Cost of seed		2	4	0
Cost of manure (cowdung and castorcake)		49	0	0
Cost of bullocks		6	8	0
Cost of labour		100	8	6
Total expenditure ..		158	4	6
Yield—				
Fibre—13 maunds 29 seers		260	12	6
Profit		102	8	0
3) (*b*) Jute—B Block—0·34 acre—				
Cost of seed		1	4	0
Cost of manure (cowdung and castorcake)		20	0	0
Cost of bullocks		2	4	0
Cost of labour		62	8	0
Total expenditure ..		86	0	0
Yield—				
Fibre—7 maunds		133	0	0
Profit		47	0	0
(3) (*c*) Jute—C Block upland—0·25 acre—				
Cost of seed		0	14	0
Cost of manure (cowdung and castorcake)		16	8	0
Cost of bullocks		2	8	0
Cost of labour		36	13	6
Total expenditure ..		56	11	6
Yield—				
Fibre—5 maunds 33 seers		110	10	9
Profit ..		53	15	3
(3) (*d*) Jute—C Block lowland—0·2 acre—				
Cost of seed		0	10	0
Cost of manure (castorcake)		10	0	0
Cost of bullocks		2	0	0
Cost of labour		41	0	0
Total expenditure ..		53	10	0
Yield—				
Fibre—5 maunds 30 seers		109	7	9
Profit ..		55	13	9

C. **General.**—All the other crops besides experimental and commercial come under general cultivation. The different crops under this head and the acreage under each crop is given below:—

	Acre.	
Kataktara paddy	0·2	(Kharif).
Reshe paddy	0·35	,,
Indrasail (broadcast)	0·35	,,
Dudkalma paddy	2·60	,,
Jatakalma paddy	2·30	,,
Jhingasal paddy	3·00	,,
Juar for silage	0·40	,,
Dhaincha for seed	1·00	,,
Groundnut	0·10	,,
Wheat	0·40	(Rabi)
Gram	0·30	,,
Linseed	0·40	,,
Water melon	0·20	,,
Pumpkin	0·20	,,

Except *Kataktara aus* paddy, which gave a very poor outturn, viz., 2 maunds 29 seers 12 chattaks only from 0 2 acre, the outturn of *aman* paddy in general quite fair.

A little *juar* was kept for seed and the rest has been put into a silo or preparation of silage. The silo pit will be opened about a fortnight hence and the silage will be fed to cattle.

Groundnut was grown on the sandy land in E Block and was a failure. Very few nuts had formed, and these even were found to be damaged by white ants when raised.

Wheat, gram, linseed and water melon were all eaten up in the young stage by stray cattle and horses. This is not likely to occur again, as the fencing round the farm is being filled up now.

Pumpkin is still growing and the condition is fair.

Under orders of the Director of Agriculture with the object of improving the sandy lands in the extreme north-west corner of the farm, indigo was sown broadcast, and the young plants were ploughed in early October in order to make the lands fit for cultivation. *Rahar* will be sown in the coming *kharif* season.

Cutivation on borga system.—No lands of the farm were cultivated on *borga* system.

Distribution of seeds.—With the reduction in the number of demonstrators and necessarily in propaganda work, the demand for seeds from the farm has been very little. Half a maund each of *Dudkalma*, *Nagra*, *Indrasail* and *Jhingasail* paddies were sold for seed purpose, as also 1 seer of jute seeds. Besides these, 2,000 sugarcane cuttings have also been sold at the end of the year, and more cuttings are likely to be sold within a few days.

Cattle.—There were 4 pairs of bullocks till the end of the year—2 more pairs of bullocks have been purchased on 27th March 1926, thus bringing the total strength of the bullocks to 6 pairs. The bullock on the whole kept good health throughout the year.

Besides the bullocks, a bull has been received on the farm from the Chinsurah Farm on the 12th January 1926.

Fishery and poultry practical training in agriculture.—There is no fishery or poultry on the farm. No cultivator's sons could be had during the year under report to work on the farm as daily labourers with a view to have practical training in agriculture.

Conference, Exhibition, etc.—No conference or exhibition was held on the farm during the year under report.

Visits and inspections.—There has been an increase in the number of outside public visiting the farm, and it is hoped the number will further increase with the gradual improvement of the farm.

The farm was inspected during the year by the Director of Agriculture, the Assistant Director of Agriculture and the Economic Botanist. The Field Assistant to the Fibre Expert also visited the farm for selection of plots for jute experiments. I made frequent inspections and guided the work of the farm.

R. DAS GUPTA,

Deputy Director of Agriculture,

Western Circle.

Financial statement of the Burdwan Farm for the year ending the 31st March 1926.

Debits.

Head of debits.	Amount of each sub-head.	Amount of each head.
	Rs. A. P.	Rs. A. P.
1. Sale-proceeds in hand at the commencement of the year, *viz.*, 1st April 1925	Nil	....
2. (*a*) Value of last year's farm produce in store at the commencement of the year	2,442 4 3	....
(*b*) Value of purchased store and other raw materials of the previous year in store at the commencement of the year	52 13 0	2,495 1 3
3. Amount of outstanding bills payable by the farm at the end of the year	....	Nil
4. Amount of unrealised sale-proceeds due to the farm at the commencement of the year ..	....	11 7 3
5. Value of tools and plants and other agricultural implements in hand at the commencement of the year ..	....	254 0 0
6. Amount drawn from the treasury during the year—		
(*a*) Pay and allowance of the staff	495 3 0	
(*b*) Wages of labourers ..	2,250 0 0	
(*c*) Purchase and feed of cattle ..	627 9 9	
Purchase of seeds, etc. ..	330 0 0	
Petty construction, etc. ..	200 0 0	
Office expenses ..	200 0 0	
Medical aid ..	15 0 0	
Rents, rates and taxes ..	47 3 0	
(*d*) Cost of stores, seed farm produce, from other farms within or outside the province by adjusting or book transfer ..	18 3 0	4,183 2 9
Total		6,943 11 3
Deduct—On account of capital expenditure—		
Petty construction	200 0 0	200 0 0
Grand Total ..		6,743 11 3

Credits.

Head of credits.	Amount of each sub-head.	Amount of each head.
	Rs. A. P.	Rs. A. P.
1. Sale-proceeds in hand at the end of the year ..	....	Nil
2. (*a*) Value of farm produce in stock for sale and farm's use..	2,178 11 0	
(*b*) Value of the purchased stores and other raw materials in stock at the end of the year ..	55 2 9	2,233 13 9
3. Amount of outstanding bills payable by the farm at the commencement of the year ..	....	Nil
4. Amount of unrealised sale-proceeds due to the farm at the end of the year ..	....	Nil
5. Value of tools and plants and other agricultural implements in hand at the end of the year	....	280 6 0
6. Amount paid in the treasury during the year—		
(*a*) Amount credited in cash into the treasury ..	3,133 14 0	
(*b*) Value of stores, seeds, etc., supplied to other farm seed depôts within or outside the province by adjustment ..	Nil	3,133 14 0
Total ..		5,648 1 9
Excess of expenditure over receipt, *i.e.*, loss		1,095 1 6
Grand Total ..	....	6,743 11 3

APPENDIX X.

Annual Report of the Bankura Farm for the year 1925-26.

Introduction.—The farm is situated on the Bankura-Purulia Road. It is by the side of the Wesleyan Mission College, and is about a mile distant from the Bankura Collectorate and 2 miles off from Bankura Railway Station. The object of the farm is to study local agricultural problems with a view to solve them.

Area.—The area of the farm is 29 acres. But the actual area under cultivation is 15·5 acres, the rest being occupied by buildings, roads, channels, wells, tanks, *ails*, and pasture.

Reclamation and drainage.—Laying out of the farm is about complete. To stop the velocity of water, which is very great owing to the steep slope which is 30 feet from south to north of the farm, some steps have been made. This work will check the constant repairing of *ails* and *bundhs* to a great extent.

Irrigation.—There is a proposal to excavate a tank at the head of the farm, near the main gate for irrigation. The Public Works Department have already submitted an estimate for the excavation of the tank and for the construction of one culvert and 2 sluices with shutters. The Petter Oil Engine Pump, which had been purchased last year for irrigation, worked satisfactorily.

Buildings.—Estimates for the construction of a shed for bull and implements and another shed for farm labourers have been submitted by the Public Works Department. Estimate for the construction of a *pucca* godown in this farm for the Economic Botanist's Section has also been submitted. One urine sump pit has recently been constructed departmentally. The godown accommodation of this farm being very small, there was much difficulty in storing the farm produce, manures, cattle food, etc.

Farm labourers.—Sonthal and other labourers were imported from the interior of the district. Some more residential labourers are needed for the farm. To provide accommodation for them, a cooly shed would be constructed. Some of the labourers have acquainted themselves to the nature of the farm work.

Stud bull.—For the improvement of local breed of cattle a stud bull was located in the farm. There is no charge for the service; 20 cows were served by the bull during the year. Many cows came for service, but they were much frightened at the sight of the bull and lay down, so the number of services is less. The number of services would increase when the service crush is constructed.

Soil.—There are three different classes of soil in the farm which exist generally in the western part of the district—*danga* (high land), *bad* (middle class land) and *shole* (low land). The following table shows the analysis of the soil:—

	Bad land (early *aman* land).	*Shole* land (low-lying *aman* land).
Loss on drying	2·260	2·380
Nitrogen	0·040	0·055
Organic	2·580	3·510
Insoluble residue	87·940	84·910
Lime	0·340	0·280
Magnesia	0·410	0·580
Potash	0·520	0·590
Phosphoric acid	0·025	0·034
Manganese	0·015	0·010

High land.

H_2O (water)	1·60
Organic matter	2·62
Sand (portion insoluble in Hcl)	85·60
Al_2O_3 / Fe 2	9·96
Ca 0	·17
Mg 0	·43
P_2O_5	0·034
K_2O	·86
Nitrogen	0·028

Rainfall and character of the season.

Months	nd year.		Number of rainy days.	Rainfall in inches.
April	1925	.. .. ..	9	3·86
May	,,	.. .. ..	7	3·09
June	,,	.. .. ..	13	5·86
July	,,	.. .. ..	21	14·24
August	,,	.. .. ..	19	11·48
September	,,	.. .. ..	10	2·72
October	,,	.. .. ..	12	6·31
November	,,	.. .. ..	1	0·52
December	,,	.. .. ..	Nil	Nil.
January	1926	.. .. ..	4	1·97
February	,,	.. .. ..	2	0·14
March	,,	.. .. ..	11	3·22
	Total	.. ..	109	53·41

The season was not a favourable one. The severe drought in September affected the *aus* paddy crop very badly and the *aman* paddy crop to some extent. The groundnut crop could not stand this severe drought and the plants died a premature death. For want of rain in November, the *kulthi* crop was dried up. But the season was favourable to the sugarcane crop. About 2 inches of rain in one day in the second week of January affected the potato crop to some extent. Pretty good showers of rain in the first and second weeks of March had a good effect on newly planted sugarcane.

Research works.—The Economic Botanist conducted researches on paddy, millet, *arahar* and soy-bean and the second Economic Botanist on cotton and fodder crops.

Economic section.—As the laying out work of the farm was not complete, no land was set apart for the Economic Section.

Borga system.—No part of the farm was cultivated on the *borga* system.

Experiment and demonstration.—Sugarcane was grown successfully on *shole* land by the draining system. Deep drains were dug out on three sides to cut up connection from outside water, and there was a drop of about 2 feet on the fourth side of the land. A *kutcha* well was made at small cost for irrigation. Both *tanna* sugarcane and *bhuri* sugarcane (local sugarcane) were tried. The result is given below. As there was a great demand for *tanna* sugarcane cuttings, it was necessary to keep 2 or 3 cuttings from each sugarcane, and the rest was crushed for making *gur*.

Variety.	Actual outturn on 1/20th acre.		Outturn per acre.		Value per acre from *gur* and cuttings.
	Gur.	*Cuttings.*	*Gur.*	*Cuttings.*	
	Md. sr. ch.	No.	Md. sr. ch.	No.	Rs. A. P.
Tanna sugarcane ..	2 20 2	1,280	50 2 8	25,600	756 10 0
Bhuri ..	1 17 0	1,496	28 20 0	29,920	359 12 0
Tanna ,, ..	1 37 2	1,340	38 2 8	26,800	653 10 0

Distribution of seeds, etc.—The following seeds, manures and cuttings were distributed:—

Names of seeds, manures and cuttings.	Quantity of seeds, manures, etc.	Number of cuttings.
	Md. sr. ch.	
Indrasail paddy	3 14 0	
Kataktara aus paddy	0 5 0	
Dadkhani aman ,, ...	1 1 0	
Badsabhog ,, ...	0 7 0	
Nagra ,, ...	2 4 0	
Charnock aus ,, ...	0 10 0	
Newali ,, ,, ...	0 37 0	
Maize	0 2 0	
Tanna sugarcane cuttings	....	10,000
Bhuri sugarcane ,, ...	....	2,480
Castorcakes	3 35 14	

Fishery and poultry.—Nil.

Practical training in agriculture.—Two boys have been employed in the farm as labourers for training in agriculture.

Conference, exhibition, etc.—No exhibition was held in the farm. A meeting of the District Agricultural and Welfare Association was held once in the farm during the year.

Variety.	Actual outturn on 1/20th acre.		Outturn per acre.		Value per acre from *gur* and cuttings.
	Gur.	Cuttings.	*Gur.*	Cuttings.	
	Md. sr. ch.	No.	Md. sr. ch.	No.	Rs. A. P.
Bhuri sugarcane ..	1 16 12	2,480	28 15 0	49,600	407 12 0
**Tanna* ,, ..	3 18 8	2,166	69 10 0	42,320	1,115 11 0
Bhuri ..	3 19 4	1,780	69 25 0	35,600	785 4 0

* *Tanna* sugarcane was badly attacked with white a..ts, whereas *bhuri* sugarcane was not at all affected.

Gur was valued at Rs. 10 per maund, *tanna* sugarcane cuttings at Rs. 10 per 100 and *bhuri* sugarcane cuttings at Rs. 2-8 per 100.

Very big sized *tanna* sugarcane was grown here. The height of the cane as far as cuttings could be taken was 11 feet, thickness was 2 inches, and the weight of the cane was 6 seers each.

Potatoes.—Darjeeling and local potatoes were tried on 1/10th acres—150 maunds of potatoes per acre were obtained from the Darjeeling variety and 130 maunds from the local variety. The size of Darjeeling potatoes was sufficiently big.

No other demonstration or experiment was made on any other crop. But the following crops were gown to test their suitability to the farm land.

Soy-bean.—This crop was grown successfully for the second time on *danga* land of this farm, the soil of which is gravelly and poor, for fodder crop in the rainy season. If this crop is grown in the rainy reason on *danga* land of the district, most part of which is lying fallow, it would solve the problem of fodder for the starved cattle of the district.

Groundnut.—Upright variety was tried. The crop was very promising up to the end of August. But the severe drought in September affected the crop very badly and the plants died before most of the fruits was matured.

Arahar.—It was grown as mixed crop with maize on gravelly soil. Maize was cut for fodder in August, leaving *arahar* to grow. The outturn of *arahar* from 3/10ths acre was 2 maunds 38 seers.

Mulberry.—It was grown on two plots (1/5th acre) of *danga* land. The plants are thriving well.

Juar.—It was grown on Agricultural Chemist's area. As the plots were levelled and no manure was applied, the crop was not satisfactory.

Cotton.—Cotton and maize as mixed crop was successful. Maize was harvested for fodder in August. Cotton crop is still on the ground and bearing bolls. Outturn of seed cotton so far obtained is 15 seers from 1/10th acre. Five maunds of seed cotton to the acre is expected.

Bengal No. 2 and 58 varieties in Second Economic Botanist's plots gave the best result. The outturn so far obtained is 7¼ maunds to the acre.

Aus paddy.—*Kataktara*, Charnock, *Newali* and *Bhutmari* were tried. But the outturn was not satisfactory due to the severe drought in September for which the crop suffered very badly.

Aman paddy.—*Jhingasal*, *Dudsar*, *Indrasail*, *Dadkhani*, *Badshabhog*, *Nagra*, *Kalamdan*, *Badkalamkati* and *Baran Kalamkati* were grown. Outturn was on the whole satisfactory, except on the land which was levelled. From 2/5ths of an acre of *Indrasail* paddy, the outturn was 11 maunds 22 seers which is more than 29 maunds per acre.

Kulthi.—The outturn was not satisfactory due to drought.

Plaintain.—Amrita Sagar Martaman plaintain suckers were grown on two plots. The plants are thriving well.

Wheat, barley, etc.—Wheat, barley, oats, lentil and pea were grown without irrigation, but the crops failed.

Gourd.—It was grown on 4/5ths acre after *amon* and *aus paddy*. It is thriving well for the present, but it is doubtful whether it would be successful without irrigation.

Visitors.—Director of Agriculture, Bengal, visited the farm twice, Assistant Director of Agriculture, Bengal, once, myself 4 times, Economic Botanist, Bengal, 4 times, Second Economic Botanist, Bengal, 2 times, Agricultural Chemist 4 times. Many persons interested in agriculture also visited the farm. Among them mention may be made of Rai Bama Charan Roy Bahadur, Babus Banbehari Sen, Radha Ballav Singh, Amaresh Chatterjee, Trailakya Nath Kundu, Kissori Mohan Chatterjee and his son Babu Khetra Pal Chatterjee, who paid several visits to the farm. All of these gentlemen have large area under cultivation.

Bankura District Agricultural and Welfare Association held its meeting in the farm once. The president and the members went round the farm after the meeting was over.

Charge.—The farm was under the direct charge of the Deputy Director of Agriculture, Western Circle. Babu Rajnath Roy was the Superintendent in charge of the farm during the year. He was assisted by three demonstrators.

Statement of accounts.—Total amount spent during the year under report, excluding the pay and allowance of the staff, was Rs. 5,551-14-6, and the remittance to the treasury was Rs. 650-15. The enclosed table shows the balance sheet of the farm.

R. DAS GUPTA,

Deputy Director of Agriculture,
Western Circle.

Financial return showing the results of Agriculture in Bankura Farm for the year ending 31st March 1926.

Debits.

Heads of debits.	Amount of each sub-head.	Amount of each head.
	Rs. A. P.	Rs. A. P.
1. Sale-proceeds in hand at the commencement of the year 1925-26 ..	Nil.	Nil.
2. (*a*) Value of last year's farm produce in stock at the commencement of the year 1925-26 ..	210 12 0	
) Value of purchased stores and other raw materials of the previous year in store at the commencement of the year 1925-26 ..	409 4 0	620 0 0
3. mount of outstanding bills payable by the farm at the end of the year 1924-25 ..	....	Nil.
4. Amount of unrealised sale-proceeds due to the farm at the commencement of the year 1925-26 ..	....	Nil.
5. Value of tools, and plants and other agricultural implements in hand at the commencement of the year 1925-26	....	2,200 0 0
6. Amount drawn from treasury during the year 1925-26—		
(*a*) Pay and allowance of the staff (including the staff of the Economic Botanist in this farm) ..	4,486 10 0	
(*b*) Wages of labourers	1,952 2 3	
(*c*) Contingencies—		
Purchase and feed of cattle ..	700 0 0	
Purchase of seeds, manures and implements ..	290 12 6	
Office expenses and miscellaneous ..	547 0 0	
Reclamation ..	1,229 12 6	
Purchase and repair of furniture	19 9 6	
Petty construction and repair ..	374 8 0	
Provision for Economic Botanist's contingencies.	380 14 6	
(*d*) Cost of stores, seeds, farm produce received from other farms within or outside the province by adjustment of book transfer ..	4 12 9	10,596 13 0
		12,806 1 0
Deduct—on account of capital expenditure—		
(1) Petty construction	374 8 0	
		12,431 9 0
Net excess of receipts over expenditure *i.e.*, profit		Nil.
Grand total		12,431 9 0

Credits.

Heads of credits.	Amount of each sub-head.	Amount of each head.
	Rs. A. P.	Rs. A. P.
1. Sale-proceeds in hand at the end of the year 1925-26 ..	Nil.	
2. (*a*) Value of farm produce in stock for sale and farm's use ..	578 11 0	
(*b*) Value of purchased stores and other raw materials in stock at the end of the year 1925-26 ..	198 7 0	777 2 0
3. Amount of outstanding bills payable to the farm at the commencement of the year 1926-27 ..	....	Nil.
4. Amount of unrealised sale-proceeds due to the farm at the end of the year 1925-26 ..	....	Nil.
5. Value of tools and plants and other agricultural implements in hand at the end of the year 1925-26 ..	....	2,000 0 0
6. Amount paid in the treasury during the year 1925-26—		
(*a*) Amount credited in cash into the treasury ..	650 15 0	
(*b*) Value of stores, seeds supplied to other farms, seed depots within or outside the province by adjustment of book transfer	Nil.	650 15 0
		3,428 1 0
Net excess of expenditure over receipt, *i.e.*, loss ..		9,003 8 0
Grand total ..		12,431 9 0

Explanation for the loss—

1. New farm.
2. Research work was conducted.
3. Pay and allowances of all the district staff and pay of the Economic Botanist's staff for his work in this farm included in the farm expenditure.

APPENDIX XI.

Annual Report of the Suri Farm for 1925-26.

Introduction.—The farm is situated to the south-west of the Suri Railway Station on the Ondal-Sainthia Line of the East-Indian Railway, and is about 2½ miles away from the civil station Suri of the Birbhum district. A considerable amount of reclamation has been made to establish the farm on the high barren waste, examples of which are numerous in the district. The object of the farm is to conduct experiments of local interest and to demonstrate successful issues on a certain part of the farm before handing them out to the district. The original work of reclamation and laying out was expedited to completion during the year under report, but it would still entail some time to attain uniformity of soil at the four corners of unit plots after the cutting and filling recently undergone. The total area of the farm is 33·26 acres, of which 23 acres have been laid out for cultivation, 1·71 acres covered by waste morum area, 6 acres occupied by roads, drains, *bundhs*, etc., 1·70 acres taken up by buildings and ·85 acre occupied by the tank (inside). Labourer's shed, threshing floor, implement shed, etc., are schemed for construction next year.

Soil.—The farm area represents sandy soil with an admixture of *kunkar* in the higher region to the east, loam across the middle and clay towards the west along side the Kundar or drainage channel. The figures of analysis given below will show that the soil is wanting in all the essential elements required for plant growth-nitrogen, phosphoric acid, potash and lime:—

	Highland surface soil.	Highland sub-soil.	Rocky soil.
Mositure	0·74	0·86	1·41
Loss or ignition	1·54	0·84	2·19
Sand	93·86	92·25	89·88
K_2O	0·26	0·29	0·21
Ca O	0·11	0·13	0·15
Mg O	0·12	0·14	0·04
Al_2O_3	3·76	5·10	6·11
Fe_2O_3	....	....	1·04
P_2O_5..	0·036	0·027	0·01
Nitrogen	0·036	0·022	0·008

Rainfall and character of the season.—The season was altogether unfavourable inasmuch as the monsoon started late with low and irregular falls and ceased absolutely in the middle of October. The rainfall record is reproduced below:—

Month and year.	Number of rainy days.	Amount of rainfall (in inches).
April 1925	7	2·15
May ,, ...	6	6·48
June ,, ...	5	5·89
July ,, ...	15	6·14
August ,, ...	18	5·99
September ,, ...	11	8·25
October ,, ...	5	3·08
November ,, ...	Nil	Nil
December ,, ...	Nil	Nil
January 1926	2	1·06
February ,, ...	1	·06
March ,, ...	9	3·23
Total ..	....	42·33

Operations during the year.—The conditions still prevailing on the newly started farm, from the cutting and filling required for laying out, do not admit of any regular cropping. The still poorer sub-soil has come on to the top surface and nothing, not even rank-growing green-manuring crops, can be expected to grow on such parts. The work of reclamation and laying out and to finish it once for all was the main operation during the year. To test suitability of crops and varieties for the farm soil and to improve the present conditions by cultivation, a system of cropping was executed and the results noted in the table below. The charges of cultivation were rather heavy on account of the unweathered soil, adverse weather conditions and of morum creeping out in numerous places. Paddy cultivation was managed all throughout the season by artificial irrigation from the tank and from the Kundar at the western border:—

A. The Economic Botanist started his trials on paddy and collected single plants of suitable varieties.

B. The Agricultural Chemist continued his test on soil uniformity. Trial of tobacco—*Motihari* and Turkish—varieties and selection of plants for seed was also done and the crops are being harvested.

C. The Second Economic Botanist had his tests on cotton, forage crops and *rabi* pulses and oilseeds.

D. The Fibre Expert conducted trials on growing jute for seed and fibre, and it has been seen that jute growing can be done in suitable quarters of the district.

Detailed statement of actual cultivation figures.—(See Appendix I, enclosed.)

The growth of crops was very poor mainly through poor and unweathered soil, but still the following observations were made:—

(1) Chinsura green jute can be grown in the district to profit on rich *bhadoi* land where retting arrangements are obtainable, and that the uplands can with advantage be grown with jute for seed.

(2) The Choto Nagpur selection of early, erect groundnut (No. 17) has the advantage in earliness and the consequent facility in harvest, particularly as the nuts adhere to the roots.

(3) The select, early *arhar*, No. 5 (Bankura), has the merit of vigorous branching and prolificness.

(4) Cowpea as a good fodder and soil renovator can be grown to profit in the uplands.

(5) Japanese millet tillers freely and has a future in connection with forage crops.

(6) The selected A 1/35 cotton is an early and prolific strain with good branching habits.

(7) The local *sada aus* paddy did best on the farm soil and conditions.

(8) The approved varieties, *Dudsar*, *Nagra*, *Jhingsal* and *Indrasail* can all be introduced in the district in their respective situations.

(9) Pusa wheat No. 4 does much better than local wheat.

(10) *Sorguja* can be introduced on Kankreli uplands and linseed on high *bhadoi* lands in the district to advantage.

Economic cultivation.—The level and soil of the farm area having undergone recent change and tranformation by cutting and filling work on economic basis could not be taken up. As a matter of fact, the work cannot be started unless and until the plots attain to soil uniformity all along their four corners.

Borga system.—Cultivation on *borga* system has not been introduced on the farm.

Seed supply.—The present conditions on the farm do not help much in the way of multiplication of seeds for supply. Cotton seeds produced on the farm were supplied to cotton growing weavers through the Headmaster of the Suri Weaving School.

The produce of approved varieties of paddy, jute, *arhar* and groundnut for the year has been reserved for supply.

Cattle.—The draught stock consists of three pairs of bullocks.

The Montgomery stud bull of the defunct Chinsura Agricultural School was brought on to the Suri Farm in August 1925. It appears that it is too heavy for local cows of the district.

Fishery and poultry.—These have not been introduced into the farm as yet. Now that the tanks has been regularised, it will be kept in view to stock it with fry next year.

Agricultural training.—One cultivator's son has been taken on as a student cultivator on daily wages. He seems to take an interest in the work. A batch of boys of the Santiniketan, Bolpur, attended the farm one day and were shown and explained on the formation and cropping of the farm.

Exhibition.—The Suri Farm produce, implements and manures were exhibited and demonstrated at the Suri Exhibition held in January 1926. The crops and varieties for different soils and levels recommended for the district and the work of the Petter's engine and pump were shown and explained to the public.

Establishment.—Babu Santiprosad Sen Gupta was the District Agricultural Officer till May 1925, after which Babu Chuni Lal Mustafi joined here in June 1925. Three demonstrators are stationed on the farm.

Visits and inspection.—The Divisional Commissioner visited the farm twice and the District Collector some five times during the year. The Director of Agriculture, the Assistant Director of Agriculture, the Economic Botanists, the Agricultural Chemist and myself made periodical inspection.

Financial Statement.—(See Appendix II enclosed.)

R. DAS GUPTA,

Deputy Director of Agriculture,
Western Circle.

Appendix 1.

Detailed statement of actual cultivation figures.

Crops grown.	Area (acres).	Cost of cultivation.					Outturn.		Profit or Loss.	Remarks.
		Seed.	Manure.	Labour.	Bullocks.	Total.	Quantity.	Value.		
		Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.		Rs. A. P.	Rs. A. P.	
Tanna sugarcane ..	·40	24 0 0	33 1 3	126 13 1	8 0 0	191 15 0	11,336 (cuttings)	51 11 0	140 4 0	Late planting and poor soil accounts for the poor crops which was used up in obtaining setts.
C. G. jute ..	·10	0 9 0	1 9 0	17 6 2	1 0 0	20 8 0	4¾ sr. seed .. 31 sr. fibre	16 0 0	4 8 0	Poor soil in morum region.
Early erect groundnut	·50	11 0 0	....	53 9 0	1 9 0	66 2 0	5 md. 22½ sr. ..	75 10 0	10 8 0	Early planting on better soil would fetch a good crop.
Arhar and Maize ..	·50	1 1 6	....	43 1 0	1 5 0	45 7 0	16½ sr. ..	1 9 0	43 14 0	Maize failed and fed to cattle.
Arhar	·35									
Soybean ..	·25	0 4 0	....	9 9 0	3 8 0	13 5 0	22 sr. fodder	6 12 0	6 9 0	Poor crop, most of which was fed to cattle.
Kurthi	·20	0 12 3	....	4 10 0	2 10 0	8 0 0	15½ sr. ..	2 15 0	5 1 0	Poor crop on poor soil.
Juar	1·10	5 2 0	....	21 5 0	2 11 0	29 2 0	36 md. ..	13 8 0	15 10 0	Very poor crop used as fodder (green).
Maize and cowpea ..	·60	1 6 0	....	17 4 0	3 14 0	22 8 0	2 md. 8 sr. ..	15 5 0	7 3 0	Mostly used as fodder.
Bhadoi kalai ..	·20	1 2 0	....	7 9 0	1 13 0	10 8 0	19½ sr. ..	3 1 0	7 7 0	A very poor crop.
Cotton	·35	2 0 0	11 15 0	79 8 0	2 15 0	96 6 0	38 sr. ..	9 8 0	86 14 0	The morum area and the late Bengal variety produced very poor crops.
Mulbery ..	·20	....	2 0 0	23 5 0	....	25 5 0	....	....	25 5 0	Crop meant to supply root stock to silk rearers finally.

Crops grown.	Area (acres).	Cost of cultivation.					Outturn.		Profit or Loss.	Remarks.
		Seed.	Manure.	Labour.	Bullocks.	Total.	Quantity.	Value.		
		Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.		Rs. A. P.	Rs. A. P.	
2nd E. B.'s fodder crops.	·60	3 2 0	3 6 6	31 14 6	6 4 0	44 11 0	13 sr. ..	5 13 0	38 14 0	Work on trial collection of seeds.
E. B.'s paddy ..	·40	....	7 4 0	48 0 0	3 12 0	59 0 0	2 md. 18 sr. grain. 3p. 18g. straw	11 10 0	47 6 0	Ditto.
Aus paddy ..	2·60	3 3 0	5 4 0	89 2 0 12 2 0	27 6 0	137 1 0	10 md. 17½ sr. grain. 1k. 14 p. straw	46 0 0	91 1 0	Poor soil and adverse weather conditions.
Aman paddy ..	6·25	8 14 6	11 8 6	269 15 0	43 5 0	333 11 0	39 md. 16 sr. grain. 6. k. 4½ p. straw	209 1 0	124 10 0	Ditto.
Tobacco ..	·30	1 8 0	15 15 0	112 4 0	14 15 0	144 10 0	....	....	....	Up-to-date figures of expenditure, crop being harvested.
Potato	·20	20 5 0	28 8 0	63 13 0	4 14 0	117 8 0	9 md. 9 sr. ..	20 12 0	96 12 0	Poor soil, unweathered.
Wheat	·39	0 15 0	3 0 0	9 14 0	4 0 0	17 13 0	13¾ sr. ..	2 9 0	15 4 0	Ditto.
Sorguja ..	·50	2 0 0	7 0 0	20 11 0	6 7 0	29 9 0	9½ sr. ..	1 12 0	27 13 0	Ditto.
Mustard, gram, lentils and linseed.	·90	2 10 0	5 13 0	59 12 0	11 0 0	79 3 0	22½ sr. ..	4 11 0	74 8 0	Work on test by 2nd E. B.; poor soil.
Dhaincha ..	·90	3 6 0	....	5 5 0	5 4 0	13 15 0	....	....	....	Meant for green manuring poor areas, but growth failed.
Total (acres under cultivation).	17·70									

Appendix II.

Financial return of the Suri Farm for 1925-26.

Debits.						Credits.					
Heads of debits.	Amount.			Amount.			Heads of credits.	Amount.			Amount.		
	Rs.	A.	P.	Rs.	A.	P.		Rs.	A.	P.	Rs.	A.	P.
1. Sale-proceeds in hand at the commencement of the year (1st April 1925)	....			Nil			1. Sale-proceeds in hand at the end of the year ..	....			Nil		
2. (*a*) Value of last year's farm produce in store at the commencement of the year	763	1	0	....			2. (*a*) Value of farm produce in stock for sale or farm use ..	291	2	9			
(*b*) Value of purchased store and other raw materials of the previous year in store on 1st April 1925 ..	97	1	0	860	2	0	(*b*) Value of purchased stores and other raw materials in stock at the end of the year ..	399	2	6	690	5	3
3. Amount of outstanding bills payable by the farm at the end of the year	....			Nil			3. Amount of outstanding bills payable by the farm at the commencement of the year ..	....			Nil		
4. Amount of unrealised sale-proceeds due to the farm at the commencement of the year ..	....			Nil			4. Amount of unrealised sale-proceeds due to the farm at the end of the year ..	....			Nil		
5. Value of tools and plant and other agricultural implements in hand at the commencement of the year	....			1,944	12	0	5. Value of tools and plant and other agriculture implements in hand at the end of the year ..	....			2,259	4	9
6. Amount drawn from treasury during the year—							6. Amount paid in cash into the—						
(*a*) Pay and allowance of staff ..	4,664	2	0				(*a*) Treasury during the year ..	662	1	0			
(*b*) Wages of labourer for cultivation	1,876	6	3										
(*c*) Feed of cattle ..	650	0	0										
(*d*) Seed manure and implements ..	700	0	0				(*b*) Value of store seeds, etc., supplied to the other farms, etc., by adjustment ..	Nil			662	1	0
(*e*) Rents, rate and taxes ..	180	0	0										
(*f*) Petty construction and repairs ..	300	0	0										
(*g*) Reclamation and laying out ..	4,100	0	0										
(*h*) Office expenses and miscellaneous	499	12	0										
(*i*) Medical aid ..	25	0	0										
(*j*) Furniture ..	50	0	0										
(*k*) Cost of stores, seeds farm produce received from other farms by adjustment or by transfer ..	16	5	6	13,061	9	9					3,611	11	0
				15,866	7	9							
Deduct—On account of capital expenditure—													
(1) Petty construction	300	0	0				Excess of expenditure over receipts, *i.e.*, loss (as explained below). ..	....			7,854	12	9
(2) Reclamation and laying out	4,100	0	0										
				4,400	0	0							
Grand Total ..	....			11,466	7	9	Grand Total ..	....			11,466	7	9

1. The barren soil and adverse weather condition produced hardly any crop.
2. The heavy establishment charge incumbent on experiments and the leave and travelling allowance of staff swelled the expenditure.

APPENDIX XII.

Annual Report of the Berhampore Farm for the year 1925-26.

Rainfall and character of the season.—During the year under report, the rainfall was well distributed. The *kharif* crops received favourable report throughout the year. The *rabi* crops were much benefitted by a timely rainfall. The weather on the whole was favourable for the growth of the plants both *kharif* and *rabi*. The following rainfall was recorded:—

Month and year.			Number of rainy days.	Actual rainfall in inches.	Normal rainfall in inches.
April	1925	..	9	5·62	1·56
May	,,	..	7	8·28	5·44
June	,,	..	10	4·79	9·89
July	,,	..	17	11·40	10·86
August	,,	..	14	8·09	11·75
September	,,	..	15	11·14	7·16
October	,,	..	7	3·32	3·59
November	,,	..	..	..	0·54
December	,,	..	..	..	0·13
January	1926	..	1	0·86	0·45
February	,,	..	1	1·70	0·93
March	,,	..	2	2·50	1·03

Establishment.—Babu Sujyoti Nath Chatterjee, District Agricultural Officer, Murshidabad, aided by two demonstrators remained in charge of the farm. As the experimental as well as general cultivation work in the farm is of an expanding nature, the post of a third demonstrator sanctioned for the farm should be filled up or, if possible, an Overseer should be appointed as early as possible. The office work has also become very heavy, and the question of appointment of a clerk for the farm now pending before the Director of Agriculture may be favourably considered.

Operations during the year.—The year's work was as follows:—

(1) *Experimental*—

A. Trial of Economic Botanist's *Kataktara aus* paddy against local *aus* paddy Malkajamra.

B. Trial of pure line *matikalai* of Economic Botanist.

C. Trial of pure line linseed, mustard, *musur*, and cotton of Second Economic Botanist.

D. Trial of sugarcane of Agricultural Chemist.

E. Trial of *Pensylvania* and *motihari* tobacco of Agricultural Chemist.

F. Trial of Pusa wheat 4, 12 and 52.

G. Manurial experiments with potato.

H. Trial of new fodder crops.

(2) *Non-experimental*—

(*a*) Propagation of *aus* paddy—*Kataktara and* Charnock.

(*b*) Cultivation of *musur*.

(*c*) Cultivation of fodder crops.

(*d*) Cultivation of C. G. jute for seed propagation.

(*e*) Cultivation of mustard.

(1) A. **Trial of E. B.'s paddies.**—Local *aus* paddy *Malkajamra* was tried against *Kataktara*. Each variety was duplicated 6 times. The results recorded are given in Appendix A.

B. **Trial of pure line matikalai.**—This work was conducted by the Economic Botanist. One hundred and eighty-eight small plots were sown and records of flowering and other peculiarities were taken by the botanical staff. It is proposed to continue the trials in the ensuing season.

C. **Pure line mustard, musur and linseed.**—This work was conducted by the Second Economic Botanist and 43, 34 and 93 plots of mustard, *musur* and linseed respectively were grown by the farm. With the exception of *musur*, the crops grew exceedingly well. It is proposed to continue the work next season.

Six varieties of Bengal cotton have also been grown for observation.

D. **Sugarcane trials.**—*Tanna* and Coimbatore sugarcane 213 were tried side by side in alternate lines. The area of each plot was one-tenth of an acre, and each crop was duplicated 12 times. This crop was given one irrigation only during the period of growth. The results are given in Appendix A/1.

These varieties of sugarcane were also grown on virgin lands without any artificial manures, and the results will be seen in Appendix B.

E. **Tobacco trials.**—*Motihari* and a cigar filler exotic variety known as *Pensylvania* were tried on one-tenth acre each. The crops grew exceedingly well, the latter obtaining a height of 4 feet 6 inches. The plants are still growing, and the results are awaited.

F. **Wheat trials.**—Pusa wheat 4, 12, 52 were tried side by side. The crops were given one irrigation. Pusa 52 is an awned variety, while the rest are awnless. The total area allotted to each variety was 1 bigha 4 kattas only. The crops has not yet been threshed, and the results are awaited.

G. **Manurial experiments with potato.**—Darjeeling potato was grown on 6 kattas of land, of which half the area received the following manurial treatment:—

Superphosphate	...	...	...	...	1 md. per acre.
Potassium sulphate		...	...	...	2 mds. „
Sodium nitrate	...	...	...	...	2 „ „

The entire plot was manured uniformly with castorcake at 3 maunds per acre. Results are given in Appendix C.

H. **Trial of new fodder crop.**—Japanese millet, a new fodder, was received from the Second Economic Botanist. The seeds were sown on a well manured soil, and the results were marvellous. The crop was sown on 6 kattas, and in two months' time it attained a height of 8′ 9″. The entire crop was kept for seed, and it is proposed to continue the trial in the ensuing year.

2. (*a*) **Propagation of improved aus paddy.**—The varieties grown were *Kataktara* and Charnock on an area of 4·28 acres and 1 acre respectively. The results are given in Appendix D.

(*b*) **Musur.**—This was grown on an area of 16 kattas. The crop grew fairly well. The crop is being threshed, and the results are recorded in Appendix E.

(*c*) **Fooder crops.**—There are 13 heads of cattle at the farm, and the following fodder crops were grown for feeding the animals: Maize, cowpea, *juar* and peas. The crops were grown in different blocks and the figures have been recorded in Appendix F.

(*d*) **Cultivation of Chinsura green jute for seed propagation.**—The crop was grown on 12 bighas and the growth was satisfactory. The results are given in Appendix G.

(*e*) **Cultivation of mustard.**—This crop was grown on 1·48 acres, and the results are recorded in Appendix E.

Cultivation on economic basis.—The crops included in above are tabulated in the statements Appendices D, E, F, G.

Cultivation on borga system.—No land was cultivated on this system during the year under report.

Distribution of seeds.—The following seeds were distributed:—

		Md.	Sr.	Ch.	Nos.
A.	Chinsura green jute seeds ..	7	6	5	
B.	*Tanna* suagr(an) cuttings ..	....			10,000
C.	Coimbatore No. 213 cuttings ..	....			50,210
D.	Charnock paddy	7	18	8	..
E.	*Kataktara* paddy	70	22	0	..
F.	Potato	11	20	8	..
G.	Mustard	11	15	0	..
H.	Maize	....			5,734 cobs
I.	Castorcake	5	30	0	..
J.	*Neem* cake	1	0	0	..
K.	Bone-meal	0	5	0	..

Cattle.—There are 12 heads of bullocks and a breeding bull in the farm. During the year under report, 12 cows were covered by the bull. The general health of the cattle continued to be good.

Fishery and poultry.—At present there is no arrangement at the farm for this. The central tank, which is being re-excavated and cleared of jungles, will afford very good facilities for fishery. Poultry on a small scale may be introduced from next year as an experiment.

Practical training in agriculture.—Babu Gopica Ranjan Chatterjee remained here for practical training in agriculture at his own expense for 3 months. Birendra Mondal, son of Fatik Mondal, a cultivator, has been taken in for practical training at the farm, and the results are awaited.

Conference, Exhibition, etc.—An agricultural show was held at the farm on 9th and 10th January 1926 under the auspices of the District Agricultural Association. The show was attended by the raiyats and others interested in agriculture in large numbers. Besides departmental exhibits, there were practical demonstrations of drawing water by power pump, of working of a motor plough, and of improved method of *gur* making. Model water lifts in use in various parts of India were also much appreciated.

Visits and inspections.—The farm was inspected by the Director of Agriculture, Assistant Director of Agriculture in charge Fibre Expert Section, Agricultural Chemist, the Economic Botanist, the Second Economic Botanist and myself. The Commissioner of the Presidency Division, the Collector of Murshidabad, the District Judge, the Settlement Officer, the Deputy Director of Sericulture, the Secretary, District Agricultural Association, Maharaja Sir Manindra Chandra Nandy, K.C.I.E., of Kassimbazar (Chairman, Murshidabad District Board), Maharaj Kumar Srish Chandra Nandy (Chairman of Berhampore Municipality) and several other persons interested in agriculture visited the farm. The Executive Engineer, Hijli Division, also visited the farm several times in connection with construction work at the farm.

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Appendix A.

Result of Kataktara compared with Malkajamra aus paddy (experimental plots).

Serial No.	Name of paddy.	Plot No.	Area.	Actual outturn of grain.	Outturn per acre.
			B. K. C.	Md. sr. ch.	Md. sr. ch.
1	*Kataktara*	1/C	0 6 0	0 39 14	9 38 12
2	Ditto	3/C	0 6 0	0 37 10	9 16 4
3	Ditto	5/C	0 6 0	1 0 8	10 5 0
4	Ditto	7/C	0 6 0	1 15 0	13 30 0
5	Ditto	9/C	0 6 0	1 35 0	18 30 0
6	Ditto	12/C	0 6 0	1 30 0	17 20 0
7	*Malkajamra*	11/C	0 6 0	0 16 0	4 0 0
8	Ditto	10/C	0 6 0	1 25 0	16 10 0
9	Ditto	8/C	0 6 0	1 30 0	17 20 0
10	Ditto	6/C	0 6 0	1 20 0	15 0 0
11	Ditto	4/C	0 6 0	1 5 0	11 10 0
12	Ditto	2/C	0 6 0	1 10 0	12 20 0

Appendix A/1.

Result of sugarcane experimental plots manured with or without nitrate.

Serial No.	Name of sugarcane.	Plot No.	Area.	Treatment.	Weight of cane.	Actual weight of juice.	Actual weight of *gur*.	Per acre.		
								Cane.	Juice.	*Gur*.
			B. K. C.		Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md.	Md. sr. ch.	Md. sr. ch.
1	*Tanna* ..	3/E	0 6 0	Non-manured ..	25 0 0	15 0 0	2 17 12	250	150 0 0	24 17 8
2	Do. ..	7/E	0 6 0	Do. ..	61 0 0	39 20 0	5 34 1	610	395 0 0	58 20 10
3	Do. ..	11/E	0 6 0	Do. ..	26 20 0	18 0 0	2 32 9	265	180 0 0	28 5 10
4	Do. ..	1/E	0 6 0	Manured ..	30 0 0	19 20 0	3 18 12	300	195 0 0	34 27 8
5	Do. ..	5/E	0 6 0	Do. ..	25 0 0	15 0 0	2 19 14	250	150 0 0	24 38 12
6	Do. ..	9/E	0 6 0	Do. ..	51 0 0	33 0 0	4 22 4	510	330 0 0	45 22 8
7	C. O. 213 ..	F/odd	0 6 0	Non-manured ..	19 20 0	11 20 0	2 2 10	195	115 0 0	20 26 4
8	C. O. 213 ..	12/E	0 6 0	Ditto ..	60 0 0	36 0 0	5 38 10	600	360 0 0	59 26 4
9	C. O. 213 ..	10/E	0 6 0	Manured ..	80 0 0	48 0 0	8 1 7	800	480 0 0	80 14 6
10	C. O. 213 ..	8/E	0 6 0	Non-manured ..	90 0 0	54 20 0	8 39 7	900	545 0 0	89 35 10
11	C. O. 213 ..	6/E	0 6 0	Manured ..	91 0 0	54 30 0	9 8 13	910	547 20 0	92 8 2
12	C. O. 213 ..	4/E	0 6 0	Non-manured ..	71 0 0	45 0 0	7 17 3	710	450 0 0	74 11 14
13	C. O. 213 ..	2/E	0 6 0	Manured ..	77 0 0	50 20 0	6 36 10	770	505 0 0	69 4 9
14	*Tanna* ..	4/d	0 6 0	Do. ..	31 0 0	20 0 0	3 12 C	310	200 0 0	33 0 0
15	Do. ..	6/d	0 6 0	Non-manured ..	59 0 0	40 0 0	5 31 8	590	400 0 0	57 35 0
16	Do. ..	8/d	0 6 0	Manured ..	45 0 0	27 0 0	4 24 14	450	270 0 0	46 8 12
17	Do. ..	10/d	0 6 0	Non-manured ..	64 0 0	39 20 0	6 7 13	640	395 0 0	61 38 2
18	Do. ..	12/d	0 6 0	Manured ..	27 20 0	17 0 0	2 29 14	275	170 0 0	27 18 12
19	Do. ..	2/d	0 6. 0	Non-manured ..	14 0 0	9 20 0	1 21 6	140	95 0 0	15 13 12
20	C. O. 213 ..	3/d	0 6 0	Manured ..	40 0 0	24 0 0	4 0 C	400	240 0 0	40 0 0
21	C. O. 213 ..	5/d	0 6 0	Non-manured ..	45 20 0	28 10 0	4 28 10	485	282 20 0	47 6 4
22	C. O. 213 ..	7/d	0 6 0	Manured ..	36 0 0	21 0 0	3 24 7	360	210 0 0	36 4 6
23	C. O. 213 ..	9/d	0 6 0	Non-manured ..	55 0 0	40 0 0	5 19 10	550	400 0 0	54 36 4
24	C. O. 213 ..	11/d	0 6 0	Manured ..	40 0 0	24 0 0	4 4 8	405	245 0 0	41 5 0
25	C. O. 213 ..	1/d	0 6 0	Non-manured ..	45 0 0	24 0 0	3 37 14	450	240 0 0	39 18 12

Appendix B.

Result of sugarcane plots (commercial).

Name of farm.	Variety of crop.	Area in acre.	Total cost.	Yield *gur*.	Total value.	Profit.	Remarks.
			Rs. A. P.	Md. sr. ch.	Rs. A. P.	Rs. A. P.	
Berhampore ..	C. O. 213	·5	165 15 9	34 19 13	310 6 9	144 7 0	Rs. 9 per maund *gur*.
Ditto ..	*Tanna*	·3	55 6 0	16 32 4	151 4 0	135 14 0	Rs. 9 per maund *gur*.
				8,000 cuttings.	40 0 0	....	Rs. 5 per thousand cuttings.
Ditto ..	C. O. 213	·2	78 2 9	17 5 10	154 4 3	76 1 6	Rs. 9 per maund *gur*.

Appendix C.

Result of potatoes experimental and non-experimental plots.

Name of crop.	Area.	Treatment.	Actual weight.	Weight per acre.	Price of produce (actual).	Cost of cultivation including manure.	Profit.	Remarks.
	B. K. C.		Md. sr. ch.	Md. sr. ch.	Rs. A. P.	Rs. A. P.	Rs. A. P.	
Darjeeling potato.	0 3 0	Sulphate of potash 4 srs. per plot. 2 seers of superphosphate per plot. 4 seers of nitrate of soda per plot.	7 0 0	140 0 0	21 0 0	18 4 0	2 12 0	Manured plot. Potato at Rs. 3 per maund.
Ditto ..	0 3 0	Without manure ..	4 20 8	90 0 0	16 13 0	16 13 0	....	Non-manured plot.

APPENDIX D.

Name of farm.	Variety of crops.	Area in acre.	Total cost.	Yield.	Total value.	Profit.	Remarks.
			Rs. A. P.	Md. sr. ch.	Rs. A. P.	Rs. A. P.	
Berhampore ..	Charnock paddy ..	1	50 8 3	21 14 0 paddy.	65 5 9	18 3 6	Paddy Rs. 3 per md.
				9 0 0 straw.	3 6 0		Straw annas 6 ,, ,,
					68 11 9		
Ditto ..	*Kataktara* ..	4·28	278 15 9	78 30 4 paddy.	275 10 0	16 2 3	Paddy Rs. 3-8 ,, ,,
				52 0 0 straw.	19 8 0		Straw annas 6 ,, ,,
					295 2 0		
Ditto ..	*Malkajamra* ..	·75	41 2 0	15 30 0 paddy.	50 1 0	9 15 6	Paddy Rs. 3 ,, ,,
				2 30 0 straw	1 0 6		Straw annas 6 ,, ,,
					51 1 6		

Appendix E.

Result of mustard, musuri and linseed.

Name of farm.	Variety of crops.	Area in acre.	Total cost.	Yield.	Total value.	Profit.	Remarks.
			Rs. A. P.	Md. sr. ch.	Rs. A. P.	Rs. A. P.	
Berhampore ..	Mustard ..	1·48	41 14 0	12 0 0	96 0 0	54 2 0	11 mds. 15 srs. mustard sold on Rs. 8 per maund and rest in the store house.
Ditto ..	*Musuri* ..	·3	8 15 6	3 2 8 grain.	9 15 3		
				9 15 0 bran.	1 12 3	2 12 0	
					11 11 6		
Ditto ..	Linseed ..	·5	3 15 9	2 2 8 grain.	12 6 0	9 2 6	Total area of the linseed plot 1·16 acre. From this ·66 acre unsuccessful for want of rain.
				6 2 8 bran.	0 12 3		
					13 2 3		

Appendix F.

Result of maize, cowpea vines, juar plants and Japanese millet.

Serial No.	Name of fodder.	Area.	Quantity of fodder.	Estimated value.	Cost of production.	Profit.	Remarks.
		B. K. C.	Md. sr. ch.	Rs. A. P.	Rs. A. P.	Rs. A. P.	
1	Maize	4 2 0	168 0 0 stalks.	21 0 0	11 0 0	44 3 6	Maize stalks at annas 2 per maund.
			Cobs 3,570 number.	34 3 6	....	....	Maize cobs at annas 15 per thousand.
2	Cowpea vines ..	1 0 0	15 2 0	1 14 0	1 6 9	0 7 3	At annas 2 per maund.
3	Juar plants ..	4 2 0	298 15 0	37 4 9	7 7 6	29 13 3	At annas 2 ,, ,,
4	Japanese millet seed ..	0 6 0	2 0 0 seed.	10 0 0	7 10 0	2 6 0	At Rs. 5 ,, ,,

Appendix G.

Result of Chinsura green jute.

Serial No.	Name of crop.	Area.	Outtern of seed.	Outturn of fibre.	Estimated price of seed.	Price of fibre.	Total value.	Cost of production.	Profit.
		B. K. C.	Md. sr. ch.	Md. sr. ch.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
1	C. G. jute ..	12 0 0	5 19 5	77 8 0	246 11 9	1,096 8 6	1,343 4 3	430 8 0	912 12 3

Financial statement showing results of Agriculture in Berhampore Farm during the year ending 31st March 1926.

Debits.						Credits.					
Head of debits.	Amount of each sub-head.			Amount of each head.		Head of credits.	Amount of each sub-heads.			Amount of each head.	
	Rs.	A.	P.	Rs.	A. P.		Rs.	A.	P.	Rs.	A P.
1. Sale-proceeds in hand at the commencement of the year	Nil			....		1. Sale-proceeds in hand at the end of the year	Nil.				
2. (*a*) Value of last year's farm produce in stores at the commencement of the year	821	12	0			2. (*a*) Value of farm produce in stock for sale and farm's use	331	8	0		
(*b*) Value of purchased stores and other raw materials of the previous year	154	2	0			(*b*) Value of the purchased stores and other raw materials in stock at the end of the year	69	15	0		
3. Amount of outstanding bills payable by the farm at the end of the year	561	5	0			3. Amount of outstanding bills payable by the farm at the commencement of the year	561	5	0		
4. Amount of unrealised sale-proceeds due to the farm at the commencement of the year	404	2	6			4. Amount of unrealised sale-proceeds due to the farm at the end of the year	459	4	6		
5. Value of tools and plants and other Agricultural Implements in hand at the commencement of the year	1,503	9	3			5. Value of tools, plants and other agricultural implements in hand at the end of the year	1,563	13	0		
6. Amount drawn from the treasury during the year—						6. Amount paid in the treasury during the year—					
(*a*) Pay and allowance of the staff	3,053	9	0			(*a*) Amount credited in cash into the treasury	4,235	1	6		
(*b*) Wages of labourers	3,020	5	9			7. Value of stores, seeds, etc., supplied to other farms, seed depot within or outside the province by adjustment	62	14	0		
(*c*) Purchase and feed of cattle	298	15	0				7,283	13	0		
Seeds, manures and implements	559	14	0								
Reclamation	3,406	8	0								
Petty construction and repairs	199	0	6								
Office expenses and miscellaneous	612	14	9								
Rents, rates and taxes	422	3	0								
Railway and steamer freight, etc.	53	13	6								
Medical aid	25	0	0								
Purchase and repair of furniture	15	8	0								
(*d*) Cost of stores, seeds, farm produce received from other farms within or outside the province by adjustments or book transfer	63	7	0								
	15,173	1	3			Excess of expenditure over receipts and loss	4,259	11	9		
							11,573	8	9		
Deduct—On account of capital expenditure—											
(1) Petty construction	199	0	6	3,605	8 6						
(2) Reclamation	3,406	8	0								
Grand total	12,148	15	0	11,573	8 9	Grand total	12,148	15	0		

The excess of expenditure in the credit side is due to the following causes :—

	Rs.	A.	P.
(1) Price of wheat crop that is being threshed and the cultivation cost of which is included in above has to be considered estimated value	100	0	0
(2) Tools, implements, etc., purchased during the year has cost ..	400	0	0
(3) Reclamation work done during the year (not remunerative) ..	3,406	0	0
(4) Non-cultivation work done during the year (not remunerative) ..	641	10	9
(5) Municipal tax paid during the year	422	3	0
	4,969	13	9

APPENDIX XIII.

Annual Report of the Gosaba Farm for the year ending 31st March 1926.

Introduction.—This farm in the interior of the Sunderbans was opened in 1920. It is 28 miles away from the Canning Railway Station by river and the journey to this island has to be made by boat across a number of rivers.

Sir Daniel Hamilton is the sole proprietor of the farm, and he kindly meets all the expenses. The department helps with advice, and has posted an officer to supervise the work of the farm.

(*b*) **Character of the soil.**—One-half of the area of the farm represents "Usar" (saline) land and the other half is sandy loam.

The figures of analyses of the soil have not been obtained. The rectification of saline soil is wholly dependent on thorough chemical analysis and on a carefully thought-out scheme of cropping to improve the conditions.

Area.—The area of the farm is 20 bighas, including portions of some *khals*. A fresh area of about 3 bighas of high land has been temporarily added to the farm since the beginning of the year under report.

Object.—The object of the farm is to find out measures for reclaiming saline usar land and to determine crops and varieties that would fetch a better income than what is obtained at present.

Bunding.—The whole area has been enclosed by a shallow ditch with a bank along side to conserve rain water for improvement of saline condition and as a further protection against cattle tresspass, besides the barbed wire-fencing. But this does not keep out goats which are a serious pest to crops and plants. The attention of the Estate Manager was invited to the matter of security from damage by goats.

Irrigation.—A tank was excavated last year in a central position on the high lands. It has brought forth saline water, which will now be baled out to make room for fresh water, catchments, to improve the tank water.

Labour.—There is always a dearth of casual labour during the field seasons in spite of higher wages being paid to secure same. This handicaps farm work. The Manager may be requested to render necessary help to the Agricultural Officer in the matter of securing extra labour during the field seasons.

Insect Pest.—The entire paddy crop of the tract was seriously damaged by an insect pest. Under instructions from Sir Daniel Hamilton, samples of the insect was sent to Pusa and identified as Schoenobius bipunctifer.

Rainfall and character of the season.—The total rainfall for the year ending 31st March 1926 was 72·96 inches as against the normal of 70 inches for the place. The table below shows the details:—

Months and year.		Actual rainfall in inches.	Number of rainy days.
April	1925..	2·95	6
May	,, ..	4·81	6
June	,, ..	5·52	15
July	,, ..	19·81	22
August	,, ..	12·92	16
September	,, ..	11·77	14
October	,, ..	8·96	15
November	,, ..	·60	2
December	,, ..	Nil	Nil
January	1926..	·38	2
February	,, ..	·54	1
March	,, ..	4·70	11
	Total ..	72·96	110

The weather was rather bad at the beginning of the year, but it turned quite favourable from the latter part of July. The abnormally heavy fall of 8·96 inches in October, when paddy was in blossom, affected pollination and so the outturn was affected.

Establishment.—Babu Nani Gopal Burman Roy was in charge of the farm up to September 1925 and Babu Sankar Prosad Bhattacherjee has been in charge since.

Cultivation of different crops during the season.—Sugarcane (1).—Yellow *Tanna* cane germinated well, but the young plants could not stand the heat produced from the saline soil during summer. The local insect pests "Nonagogra" was the second factor in bringing about wholesale destruction of the crop.

Jute (23).—The germination of jute was thin and the crop could not grow well through excess of salt in the soil.

Sunn hemp.—1, Juar, 2, maiza, 20, cotton (on the fence), etc., germinated very thinly and died out from the same cause.

Dhaincha (68).—It was tried in three different plots. It grew well on a portion only of 1 plot, which seems to contain in moderation and died out in all the other areas.

Kataktara paddy (25) has been broadcasted in 1 plot and transplanted in the other. The crop was damaged by hispa and destroyed through excess of salt:—

Deep water paddy (57) was broadcasted in 1 plot and transplated in another. Both the crops failed in the saline soil.

Manurial experiment on Patna paddy (30).—An experiment with different kinds of manure as sodium nitrate, superphosphate, and castorcake on Patna paddy had been carried on with a view to find out which of those manures could give the highest yield. Each manure had been applied in alternate plots. The table below shows the results:—

Names of manure.	Area.	Actual outturn. Grain. Md.	sr.	ch.	Straw. Md.	sr.	ch.	Outturn per acre. Grain. Md.	sr.	ch.	Straw. Md.	sr.	ch.
Sodium nitrate ..	·05	0	37	8	1	26	0	18	30	0	33	0	0
Check plot	·05	1	8	0	1	20	0	24	0	0	30	0	0
Superphosphate ..	·05	0	33	0	1	14	0	16	20	0	27	0	0
Check plot	·05	1	5	0	1	26	0	22	20	0	33	0	0
Castorcake	·05	1	6	0	1	20	0	23	0	0	30	0	0
Check plot	·05	0	35	0	1	2	0	17	20	0	21	0	0

Production for seed supply.—Patna (3·33) and Banktulsi (·24) varieties were grown in different acres with slightly better results than that from other varieties in spite of the damage by *Scheonobius bipunctifer bipunctifer.*

Winter vegetable.—Abnormally heavy and continuous rains in October delayed the preparation of land for winter vegetables. The first outlook was very promising, but the young crop was damaged wholesale by insect pest in December and January.

Cattle.—One bullock died in October through old age. At present there is only one pair of bullocks.

Visits.—The Collector of the district visited the farm. Several respectable gentlemen also visited the farm during the year under report.

Appendix I.—Financial statement showing receipts and expenditure of the farm during the period under report. Net receipts for 1925-26 were Rs. 124-8, while expenditure was Rs. 662-6:—

Details.

Receipts.	Rs.	A.	P.	Expenditure.	Rs.	A.	P.
Net cash receipts during the year and made over to zamindar kutcheries ..	124	8	0	Purchase of seeds ..	24	13	6
				Implements	2	8	0
				Purchase of books ..	12	0	0
				Purchase of manures ..	29	4	0
				Cultivation	452	12	9
				Reclamation	103	6	0
				Office expenses and miscellaneous ..	33	12	9
				M. O. commission ..	0	4	0
				Railway freight ..	3	1	0
				Cooly and cart-hire ..	0	8	0
				Total ..	662	6	0

Appendix II.—Area under the principal crop in 1925-26 were—

Name of crop.	Area.	Actual outturn.
		Md. sr. ch.
Sugarcane (about 300 cuttings) ..	·10	....
Jute	·23	0 9 4 (fibre).
		0 7 10 (seed).
Sunn hemp	·10	0 1 8 (seed).
		0 1 0 (fibre).
Juar for fodder	·20	15 0 0
Maize (failed)	·20	....
Rahar (on the fence)		....
Cotton (on fence)		0 5 12 (from 50 plants).
Dhaincha	·68	0 8 8 (fibre).
		0 17 0 (seed).
Aus paddy (failed)	·25	....
Deep water paddy (failed) ..	·57	....
Patna paddy	3·33	17 21 9
Banktulsi	·24	5 12 8
Patna (manurial)	·30	6 4 8
Vegetables and seeds (value Rs. 6-6-6)	·33	....

R. DAS GUPTA,

Deputy Director of Agriculture,
Western Circle.

APPENDIX XIV.

Annual Report of the Khas Mahal Farm, Jessore, for the year 1925-26.

Introduction.—This farm was started in April 1920. The present area of the farm is about 15 bighas.

Situation and shape.—It is situated about a mile from Jessore Railway Station, within the Jessore Municipality, and about 5 minutes walk from the district court. The shape of the farm is like an inverted ( ) and is most inconvenient from the point of supervision of labour and cost of maintenance of the fence. Every year a considerable amount of money is spent over repair of fences, hence to save this recurring expenditure, it is desirable to have a permanent woven wire-fencing.

Area.—The total area of the farm is 15 bighas, and out of this, about 10 bighas are under actual cultivation, while the rest is occupied by roads, drains, godown, cattle shed, yards for threshing grains.

Object.—The main objects of the farm are—

(1) Demonstration of departmental varieties of crops and multiplication of seeds for distribution.

(2) Experiments with new crops, manures and implements for introduction.

(3) Demonstrate the advantages of irrigation. The soil of the farm is a light coloured loam.

Irrigation and drainage.—One 6′ diameter *pucca* well, the construction of which has just been completed, the farm area has been properly drained, and it is laid out in regular plots, which are practically level.

Buildings.—The thatched cattle shed and godown with malis' hut have been thoroughly repaired this year. One *pucca* godown is urgently needed as it is very troublesome and expensive to keep seeds from ravages of white ants and rats.

Rainfall and the character of the season.—The statement below shows the rainfall registered at Jessore town during the year 1925-26 :—

Month and year.	Number of rainy days.	Actual rainfall.	Normal rainfall.
April 1925 ..	8	8·33	3·66
May „	9	11·41	8·08
June „	18	11·71	12·67
July „	18	5·29	12·20
August „	12	3·14	10·95
September „	15	17·10	8·55
October „	6	3·92	4·89
November „	2	0·18	1·02
December „	..	..	0·20
January 1926	1	1·04	0·36
February „	..	..	1·34
March „	6	2·85	2·11
Total ..	95	64·96	66·03

The character of the season.—The season in the beginning of the year was bad, as there was no rain in March and first half of April 1925, which made the preparatory tillage operations impossible. With the rainfall in the last half of April the tillage operations began, and the crops were sown in semi-prepared lands, resulting the growth of extra weeds in the fields which in turn retarded the growth of the crops and continuous showers in May and June hampered the weeding operations. The rainfall of July and August were very scanty, which affected

the growth of *aus* paddies and broadcasted *aman* paddies greatly and delayed the transplanting operations of *aman* paddies in the western part of Jessore district. But the heavy showers of rain in September saved the situation to some extent, and with normal October rains a moderately fair outturn was obtained. The season for *rabi* crops was fair in the beginning, but received no rain in February which caused the outturn to fall below normal.

Establishment.—Babu Virarudra Roy was in charge of the farm throughout the year, excepting for the following periods when he was on leave due to ill-health: (1) From 4th November 1925 to 1st January 1926 when Babu P. K. Bhowmik acted in his place, and again from 1st to 20th March 1926 when the Sadar Demonstrator was in charge of the farm. The Sadar Demonstrator helps the Agricultural Officer in the management of the khas mahal farm work. The Sadar Demonstrator also suffered from malaria very much, and had to go on leave twice during the year for a period of 5 months when Jatindra Lal Dey acted for him 2 months and Amrita Lal De acted for him for 24 days only as he left being ill. A separate demonstrator for the management of khas mahal farm is urgently required as the demonstrator finds very little time for other works and the District Agricultural Officer had to do all the office works single-handed.

Operations during the year.—In the beginning there was no money for preparatory tillage operations. Cultivation was done by the farm mali only, but as soon as the rain set in in last part of April labour had to be employed to hasten cultivation. The wage of labours was paid by District Agricultural Officer, which was ultimately recouped as soon as District Board grant was received. Money ought to be allotted from the very beginning of the year, otherwise it becomes difficult to manage the farm.

The following statement will show the crops grown in the farm with area of each crop, cost of cultivation, outturns, money value of outturn and profit or loss

Statement.

Serial No.	Name of crops.	Area of each crop in acres.	Cost of cultivation of each crop.	Actual outturn obtained.	Market rate per maund.	Value of total outturn.	Profit or loss.	Remarks.
			Rs. A. P.	Md. sr. ch.	Rs. A.	Rs. A. P.	Rs. A. P.	
1	*Barajamina aus* paddy	·10	3 14 9	1 5 0	4 0	4 8 0	0 9 3	Low yield of *aus* paddy is due to unfavourable weather conditions.
2	*Kataktara aus*	·55	31 11 9	6 37 2	5 0	34 10 3	2 14 6	
3	*Ditto*	·25	6 15 6	0 20 0	5 0	2 8 0	4 7 6	The crop was damaged by Brahmani bull.
4	Charnock *aus* paddy	·10	6 6 3	1 5 0	5 0	5 10 0	0 12 3	
5	Chinsura green jute with nitrate ..	·50	56 3 6	12 35 8	17 0 17 8	222 14 0	166 10 6	Half maund per bigha.
6	Chinsura green jute without nitrate ..	·50	65 11 0	8 8 0	19 0	160 8 9	94 13 9	
7	D. 154 for seed, dry stalks	·225	20 9 0	1 15 0	35 0	48 2 0 20 0 0	47 9 0	
8	Chinsura green for seed, dry stalks ..	·10	4 2 0	0 3 0	45 0	3 6 0 10 0 0	9 4 0	
9	Yellow *tana* sugarcane cuttings cane sold 1,400.	·60	216 8 6	28 5 3	8 8 8 0	212 8 0 112 0 0 2 15 0	110 14 0	
10	Comilla *rarhar*	·11	5 4 9	0 7 0	7 8	1 5 0	3 15 3	Damaged by insects.
11	Maize and *juar* fodder	·10	1 4 9	Cattles are fed with it for two months.				
12	Wrinkled peas from Hossengabad ..	·10	2 10 6	0 35 0	8 0	7 0 0	4 5 6	
13	Patna peas, green peas sold	·50	19 7 3	2 32 8	6 8	18 4 6 2 5 0	1 2 3	
14	*Masuri*	·30	9 13 9	2 30 0	5 0	13 12 0	4 0 9	
15	Mustard	·225	6 3 6	2 10 0	8 0	18 0 0	11 12 6	
16	Darjeeling potatoes	·10	18 3 9	15 20 0	3 2	46 11 0	27 7 3	
17	English vegetables	·025	2 12 3	Produce sold.		4 2 0	1 5 9	

Cultivation on economic basis.—An area of 1·925 was cultivated on economic basis in *kharif* season and ·325 acres in *rabi* season. The following statement will show the details:—

Variety of crops.	Area in acres.	Total cost.	Yield.	Total value.	Profit.
		Rs. A. P.	Mds. Sr. ch.	Rs. A. P.	Rs. A. P.
1. C. G. jute for fibre	1·00	121 14 6	21 3 8	383 6 9	262 8 3
2. D. 154 for seed ; dry stocks sold.	·225	20 9 0	1 15 0	48 2 0 20 0 0	47 9 0
3. Yellow tanna sugarcane ;	·60	216 8 6	28 5 3	212 8 0	
cuttings at Rs. 8 per 100 ;			1,400 0 0	112 0 0	110 14 0
canes sold.				215 0 0	
4. Darjeeling potatoes	·10	18 3 9	15 20 0	46 11 0	27 7 3
5. Mustard ..	·225	6 3 6	2 10 0	18 0 0	11 12 6

Cultivation on Borga system.—Nil.

It is proposed to let out some plots on *borga* system this year if the farm does not get any grant from the Board of Revenue.

Distribution of seeds.—The following statement will show the amount of seed distributed from the farm:—

Name of seeds.	Quantity distributed.
	Mds. sr. ch.
K. B. jute seed (D. 154) ..	2 13 8
Charnack *Aus* ..	1 13 0
Kataktara ,, ..	9 30 0
Gangajali wheat ..	2 10 0
Pusa wheat ..	2 0 0
Comilla *rahar* ..	0 2 8
Patnai peas ..	0 15 0

Tanna sugarcane cuttings—8,000.

Cattle.—The farm has got only one pair of cattle; out of this, one animal has become old, and will have to be replaced soon. The condition of cattle throughout the year was good.

Fishery and poultry.—Nil.

Practical training in agriculture.—Nil.

It is expected to get a boy soon. His age is 19 years, he cannot read or write. It is difficult to get boy who can read.

Conference, exhibitions.—Nil.

Visits and inspection.—During the year the farm was visited several times by me in course of my tours. The Collector of Jessore frequently visited the farm. The Commissioner of the Presidency Division has also inspected the farm during his last visit to this place. Subdivisional Officer, Jessore, often visits the farm. Besides the above, some of the cultivators from the villages near about watch the progress of the crops with interest.

Proposal for extension of the area of khas mahal farm.—At a meeting of the District Agricultural Association, Jessore, it was proposed to extend the area of the farm. Accordingly a scheme was sent up to the Director of Agriculture. The District Board, Jessore, promised to contribute Rs. 2,000 for the acquisition of lands.

Acknowledgments.—Thanks are due to the Hon'ble S. K. Sinha, I.C.S., Collector of Jessore, and Mr. H. C. Bose, Subdivisional Officer, Jessore, for their keen interest and strong support for the improvement of the farm.

R. DAS GUPTA,

Deputy Director of Agriculture,
Western Circle.

Financial statement showing the results of Khas Mahal Demonstration Farm, Jessore, for the year ending 31st March 1926.

Heads of debit.	Amount of each sub-head.	Amount of each head.
	Rs. A. P.	Rs. A. P.
1. Sale-proceeds in hand at the commencement of the year, *viz.*, 1st April 1925 ..	Nil	Nil
2. (*a*) Value of last year's farm produce in stock at the commencement of the year	163 1 3	
(*b*) Value of purchased stores or other raw materials of the previous year in store at the commencement of the year ..	....	163 1 3
3. Amount of outstanding bills payable by the farm at the end of the year	Nil	Nil
4. Amount of unrealised sale-proceeds due to the farm at the commencement of the year	....	16 0 9
5. Value of tools and plants and other agricultural implements in hand at the commencement of the year	....	147 8 0
6. Amount drawn from treasury or other source during the year—		
(*a*) Pay and allowances of the staff	Nil	
(*b*) Wages of labourers	540 13 3	
(*c*) Contingencies to be shown under different sub-heads of the budgets ..	304 9 0	
(*d*) Cost of stores, seeds, farm pruduce, etc., received from other farms within or outside the province by adjustment by book transfer	....	845 6 3
		1,172 0 3
Deduct—On account of capital expenditure— (1) Petty construction and repairs ..	....	160 11 9
		1,011 4 6
Net expenditure excess of receipts over expenditure, *i. e.*, profit ..	....	127 8 3
GRAND TOTAL ..	....	1,138 12 9

Heads of credit.	Amount of each sub-head.	Amount of each head.
	Rs. A. P.	Rs. A. P.
1. Sale-proceeds in hand at the end of the year ..	Nil	Nil
2. (*a*) Value of farm produce in stock for sale and farm use	151 2 6	
(*b*) Value of purchased stores and other raw materials in stock at the end of the year ..	....	151 2
3. Amount of outstanding bills payable by the farm at the commencement of the year ..	....	10 12 0
4. Amount of unrealised sale-proceeds due to the farm at the end of the year ..	....	31 9 0
5. Value of tools and plants and other agricultural implements in hand at the end of the year ..	....	132 13 0
6. Amounts paid in the treasury during the year—		
(*a*) Amount credited in cash in the treasury ..	812 8 3	
(*b*) Value of stores, seeds, etc., supplied to other farms seed depots within or outside the province by adjustment ..	....	812 8 3
Excess of expenditure over receipts, *i.e.*, loss	....	....
GRAND TOTAL ..		1,138 12 9

APPENDIX XV.

Annual Report on the working of the Ranaghat Mullick Agricultural Farm during the year 1925-26.

The Ranaghat Mullick Agricultural Farm with its many branches at different stations and headquarter and experimental station at Ranaghat has been in existence since the year 1914. It has been successfully carrying on agriculture and the allied industries on up-to-date lines with the aid of scientific implements, machineries and manures.

Whatever improvement Bengal might have achieved in other respects, it has never turned its attention to anything of constructive nature, and in the whole of Bengal there is not a reliable big seed farm which grows its own seeds on scientific basis and supplies to the public. It is with this object in view that in our experimental farm at Ranaghat and demonstration farms in other places, special stress is given to the multiplication of seeds, the success of which now depends chiefly on the co-operation of the Government and public. It is gratifying to note here that within the short period the seeds turned out by this farm have been duly appreciated by all who really care for pure seeds, and the Department of Agriculture has encouraged the farm by buying the seeds and recommending them to the public.

The cultivation of *Kataktara* paddy seeds on a large scale has been maintained in spite of trying circumstances and environments.

Besides this, the following seeds are also grown on a large scale:—

(1) Charnock, a very very fine rice though *aus*.

(2) *Nagra aman*, *Indrasail*.

(3) Deep water paddy (which stands inundation very well).

(4) Wheat and *rahar* of different varieties; peas, both country and foreign; pulses and all sorts of *rabi* crops, have been highly spoken of by all, and have received praises and prizes at different exhibitions.

In our fodder department there are *juar* of different varieties—*Bajra*, *shinjee* and guinea grass. These varieties were introduced from different localities, which have adopted our soil nicely.

We recommend these and our acclamatised varieties of *juar* to the public for fodder crop seeds. The grass seed *bhuro* (*Panicum-colonum*) grew luxuriously, and it drew praise from the Director of Agriculture.

Besides growing as fibre crop, jute is being cultivated in this farm on a fairly large area for supplying seed to the Department of Agriculture. We are glad to note here that the germination of the present year jute crop was very very satisfactory. We have every reason to believe that jute seed will grow very well in all high lands of the Presidency Division.

The farm has maintained its good name and reputation for growing foreign and country vegetables; brinjals, beans, tomatoes and cucurbits have beaten previous records; and there is growing demand of seeds for these and other vegetables. *Capsicums* and chillies of this farm are a wonder.

It is gratifying to know that experimental works with tanna and C. O. 213 varieties of sugarcanes were carried very successfully as experimental and field crop in the farm in the year under report, and for crushing the canes in time, a big crushing mill, driven by engine power, introduced with much success. These successful operations have encouraged the proprietors to utilise their whole strength in near future in the cultivation and expansion of sugarcane cultivation in their farms, and with this object in view Master S. N. Mullick was sent to Bhupal, C. I., to learn and gain first hand experience from Hon'ble Khan Bahadur Hadi, Minister for Agriculture and Education, Bhopal, on the art of *gur* and sugar making on up-to-date lines. It is further to be noted in this connection that the proprietors in the beginning aimed at extensive cultivation for which large areas of land were acquired. Experience however has taught them the utility of intensive cutlivation, and consequently they have curtailed their original scheme, and have achieved the interesting result of less cultivation but more profit.

Machinery used during the year: 10—20 B. H. P. tractor with all necessary implements. 2½ B. H. P. oil engine and 2″ water pump. No. 45 Chatanuga cane crushing mill with all the implements.

Implements drawn by bullocks: Country ploughs, etc., Chatanuga ploughs, Meston ploughs, Disc harrows, Spring tooth harrows, heed drill.

Hand power implements: Challenge water lifting force pump. Planet junior hoes, etc. Winnower. Trenching hoes. American rakes.

Manures used during the year: Farmyard manure. Leaf mould. Lime cow-dung. Sulphate of ammonia. Nitrate of soda. Bonemeal. Superphosphate. In the diary section, a pedigree Pusa bull has been added to the stock for breeding purpose. The sericultural section of this farm have been transferred by a special notification in the *Calcutta Gazette* of the 13th January 1926, placing this nursery under the Superintendent of Sericulture, Malda, and the work of mulberry cultivation has been taken up in right earnest.

It is gratifying to note that the local cultivators who had hitherto been indifferent to the improved and scientific methods of agriculture are now taking keen interest in such methods as is displayed by the taste that has fortunately been created amongst the ordinary cultivators to visit our farm at their leisure with the curiosity of beginners. This is no doubt a hopeful sign. It is further to be noted in this connection that though we watch with sorrow the apathy of the *bhodrolog* classes to the agricultural pursuits in the year under report, we had to answer many queries from many well-to-do and educated men regarding the opening of farms on better lines. This indeed is hopeful sign, and we offer our humble help and co-operation to those who care to have them.

RAI KUMUD NATH MULLICK, BAHADUR,

Director, Mullick Agricultural Farm,
Ranaghat.

APPENDIX XVI.

Annual Report of the Amarpur Bimala Agricultural Institute for 1925-26.

Introduction.—The Institute was started in 1920 with the object of imparting agricultural education to the boys of the primary school which was ultimately raised to the status of a High English School recognised by the Calcutta University in the year 1923.

Site.—The school is situated on the western bank of the Damodar in the district of Burdwan. The place is about 9 miles off from the Tarakeswar Station of the Tarakeswar Branch of the East Indian Railway. The approaching road from Tarakeswar is in a wretched condition, and no conveyance except palanquin, is available to intending visitors.

Mode of agricultural teaching—Agriculture.—Both practical and theoretical is taught in the top five classes according to the curriculum. There are no fixed text-books for the subject in any class. The students follow the lecture delivered in their classes according to the fixed routine, much care and attention being paid towards making the lectures impressive. Experiments are made, and specimens are shown in the classes whenever possible.

Staff.—The staff consists of the Superintendent (Agricultural Officer), the Head Master and 9 assistant teachers.

Management.—The management is under the control of a committee reconstituted in the year 1925, with the Sadar Subdivisional Officer as *ex-officio* president and Rai M. N. Pal Bahadur (donor and founder of the school) as Secretary. The Institution is up to the year under report a free one. The committee is proposing to introduce fees recently, but no definite decision has yet been arrived at. Of the annual recurring expenditure of about Rs. 6,000 (excluding the pay of the Superintendent), about Rs. 5,000 a year is being met by the secretary himself, and the rest by the monthly grants-in-aid of Rs. 89 by the Government.

Number of students.—The number of students on the roll is about 230, out of which 140 receive agricultural instructions.

Results.—This year 9 boys out of 10 passed the Matriculation Examination. Fourteen boys have appeared at the Matriculation Examination in 1926. In the two examinations, half-yearly and annual held this year, about 92 per cent. of the students were successful in agriculture. A first class and a second class certificates have been awarded by the Khulna Agricultural Exhibition for the excellence of the vegetable exhibits sent from this school this year.

The hostel.—(*a*) In the attached hostel there are 50 students and 7 teachers resident therein. For want of accommodation, some 20 boys had to be refused admission. No seat rent is charged. The messing charge is about Rs. 8 to 9 a month.

(*b*) The hostel students offer congregational prayers, both morning and evening for half an hour before they seat to study. Attempt is made also for developing in them a taste for music.

(*c*) Discipline is maintained and management conducted by the students committee of elected members from amongst themselves. There is also a Superintendent for the hostel to guide the committee.

The poor fund.—The school has a poor fund organisation divided into two branches—one for the hostel and the other for the general school. In each branch there is a general committee of elected student members with a teacher president in each (nominated by the Head Master). The general branch spend about Rs. 5 a month towards helping the poor students and the hostel branch incur a recurring expenditure of about Rs. 25 a month towards feeding poor students and the sufferers of the locality. The fund is maintained by subscription raised from the students and by the boys begging alms from village to village on Sundays.

The Volunteer Corps and social service.—On the occasion of "Shivaratri" festival at Tarakeswar strong Volunteer Corps were formed, and they rendered valuable services to the pilgrims. The formation of a permanent body of boy scouts is in contemplation.

Practical agriculture and gardening.—In the spacious flower garden in front of the school some 15 varieties of season flowers have been grown on beds of Africa, India, Bengal and Burdwan and on the other circular and rectangular beds. In some 85 flower tubs, different varieties of crops and flowers (with different plant food) were grown for class experiment, as also for decoration.

In the small plot of land, whose area is about an acre for demonstration (just behind the school premises), the following crops were grown (with the help of the students) with success: Paddy, jute, cotton (9 varieties), potato (3 varieties), rahar (2 varieties), English and country vegetables, *e.g.*, brinjal, onion, radish, coriander, cabbage, cauliflower, turnip, knolkhol, beet, lettuce, tomato, chillies, pease, beans, grams, mustard and lentils.

Arrangements have been made with some local farmers for manurial experiments with sulphate of ammonia, superphosphate and potash which were supplied by the sulphate of ammonia syndicate and nitrate of soda by the Chilean Nitrate Propaganda. Some seeds and seedlings were distributed to the students and local teachers of the school and local farm for demonstration in their own fields. Of the 50 bighas of char land (acquired by the Secretary for the school), a portion of 20 bighas was reclaimed last year. Of this, some portions have been leased out by the Secretary this year.

Rudiments of Dairy.—A typical small local cow was purchased by the Head Master for experiment. Her daily yield was half a seer last year. By proper feeding and care, it has been found that she is giving this year about 3 seers of milk a day in her second lactation period. The hostel students tend and feed the cow.

Clay modelling, drawing and paper cutting.—The last four classes are taught drawing, paper cutting and clay modelling. The clay models are highly satisfactory.

Carpentry and tailoring.—Carpentry and tailoring classes have been suspended for want of funds.

Library.—In the library there are about 900 books, both English and Bengali, consisting of reference books, works of eminent authors, text-books and juvenile readers.

Drill and sports.—For the physical training of the students, drill is taught up to the third class. There are two football and two cricket teams and one badminton team. Country games are also played. Parallel bars and club playing are taken up by elderly boys.

The prize distribution ceremony for the season 1925-26 was held in the month of March. Sir P. C. Roy presided over the meeting and distributed the prizes. He was highly charmed at the conduct of the boys and the general activities of the school.

Medical aid.—Close to the school building there is a charitable dispensary founded by Rai M. N. Pal Bahadur and maintained by the District Board (Burdwan) with the interest of the donation made by the Rai Bahadur. The medical officer very kindly looks after the health of the students, residents in the hostel.

Construction and repairs.—This year a Persian wheel has been constructed and fitted in the well on the school compound for irrigation. The plan was adopted from Lyalpur in the Punjab.

Three quarters for the teachers and the extension of the hostel building and a room for the poor fund stationery shop are under construction.

The school building has been thoroughly repaired (including alteration of the rooms), and the stock of furniture has been strengthened this year.

Conclusion.—In short every attempt is being made towards making the Institution a success in its manifold activities.

One cannot avoid the temptation of mentioning that Sreeman Beneari Lal Mandal, an ex-student of the school, has recently opened an Agricultural Middle English School in his neighbouring village, and be it said to his credit, as also to the credit of the Institution, that Sir P. C. Roy praised his activities in glowing terms on his visit to that school.

One cannot find words to adequately thank the members of the teaching staff and the medical officer of the local charitable dispensary, by whose untiring zeal and energy the Institution has been made what it is to-day. In the words of Sir P. C. Roy "the teachers are working more for the love of the work than for sordid gains".

R. DAS GUPTA,

Deputy Director of Agriculture,
Western Circle.

APPENDIX XVII.

Annual Report of the Mahisadal Dinanath Agricultural Farm for the year 1925-26.

Late Babu Chuni Lal Bag of Mahisadal made a gift of about 29 bighas of land for starting a farm in 1922 for agricultural education to be imparted in the middle English school situated in his house. The Raja Bahadur of Mahisadal, who had 3 bighas of land within the boundary of Chuni Babu's land, also made a gift of that land. Thus the area of the Mahisadal Farm which was started in 1923 comes to about 32 bighas. The school being closed, the question of agricultural education to the students had to be abandoned.

The farm was managed by a committee, of which the Subdivisional Officer, Tamluk, was the President, and the Sub-Registrar of Mahisadal was the Secretary. Babu Manindra Nath Bhowmik, Agricultural Demonstrator, maintained by the District Board, was in charge of the farm. The Officer in charge of Midnapore district work occasionally visited the farm and gave necessary instructions.

District Board, Midnapore, up till the year 1924-25 financed the farm with Rs. 4,750, out of which about Rs. 3,600 was spent on initial expenditure (purchase of bullocks and implements, excavation of tank, reclamation, fencing, etc.). The Board did not pay any money last year as the present Chairman wanted to know in writing from the Agricultural Department whether the farm would be self-supporting and whether some educational benefit would be derived from this farm, etc., etc., before further sum was vested on the farm. The Assistant Director of Agriculture, Bengal, visited the farm in this connection in December 1925. The fate of the farm has not yet been decided.

Paddy was grown on 15 bighas of land. The total outturn was 72 maunds 15 seers that is about 5 maunds per bigha. Tobacco was grown on 1 bigha, but it was a failure. Radish grown on 1 bigha of land also failed. Rupees 3-13-9 was received from the sale of cauliflowers from 1 cottah of land. The area under cultivation was 17 bighas, 1 cottah, and the receipt from the sale of crops produced in this area was Rs. 308-6-9, whereas the total expenditure of the farm (excluding the pay of the Agricultural Demonstrator) was Rs. 526-9-3.

The above expenditure (Rs. 526-9-3) of the farm was met from the following source of receipts:—

	Rs.	A.	P.
Balance amount in hand from previous year ..	362	13	1
Sale-proceeds of the farm crops	308	6	9
Sale-proceeds of 4 bullocks	128	0	0
Interest on S. B. deposits	12	10	3
Total	811	14	1

There was a balance of Rs. 285-5-1 at the end of the year.

N.B.—Pending the appointment of a District Agricultural Officer, the farm area is now being run by the District Board, Midnapore, on a crop sharing basis.

R. DAS GUPTA,

Deputy Director of Agriculture,
Western Circle.

APPENDIX XVIII.

Annual Report of the Dacca Central Farm for the year 1925-26.

Introduction.—This farm is the Research Station of the Bengal Agriculture Department. Here we have an area of 657 acres of land, of which 304 acres were acquired a few years ago for an institute. The original farm of 353 acres is the centre where the two Economic Botanists, Agricultural Chemist and the Fibre Expert carry out their respective experimental works. In addition to this, we have a cattle breeding section and an agricultural school. In the cattle breeding section there is a herd of cattle, the object of which is to improve the cattle of Bengal both as regards stature and milking capacity. The agricultural school is maintained purely for giving practical training combined with simple theory in Agriculture to the boys.

A laboratory is maintained for pure research work. There are several miles of roads and drains to be kept in order and many buildings—both residential and non-residential. Many people—both official and non-official—visit this station, and it is necessary to keep everything neat and clean. All this means heavy cost, and all these points should be borne in mind in considering the expenses of this farm.

The commercial area of 22·09 acres worked on an economic basis, gave a profit of Rs. 782-7-9 against Rs. 1,205-8 obtained in 1924-25. The reduction in the profit was due to a bad harvest and heavy expenditure in cultivation on account of bad weather.

The land of the farm is poor and not suitable for some of the ordinary crops of the province. Practically speaking, only *aman* paddy can be grown at a profit. *Aus* paddy and jute may be profitable if the season for weeding and harvesting is auspicious, but all other crops are problematical so far as money is concerned.

History.—In 1906 the site of the farm was selected and finally approved by Sir Bamfylde Fuller, the then Lieutenant-Governor of Eastern Bengal and Assam, after personal inspection

The idea of selecting the site is to study the needs in way of improvement of a large tract of similar land in Eastern and Northern Bengal.

The farm comprises of a compact block of an area of 353·7 acres of land and is about 3 miles to the north of Dacca Railway Station.

The land was acquired at a cost of Rs. 70,043, at the time of acquisition, only a small portion of the land was under cultivation, and the rest was covered with scrub jungle, thatching grass, etc. Nearly all the jungle area has now been reclaimed and laid into regular plots. In the year under report, some portions of the land, the level of which was unsuitable for cropping, were reclaimed and made into high and low land respectively.

During the year 206·50 acres were under cultivation against 214·96 acres in the previous year, and the rest is occupied by pasture, roads, drains, ails and buildings. The reduction in the area under cultivation was due to transference of lands for building, roads and drains.

The area (304·478 acres) which was acquired for the proposed Agricultural Institute remains under the charge of the farm. The low land and a portion of the high land amounting to 78·39 acres were cultivated under *borga* system, and an area of 15 acres were cultivated by the second Economic Botanist in his experimental work on paddy.

Soil.—The soil of the farm is a stiff red laterite typical of a considerable tract—the Madhupur jungle and the Kheor and Barind of Rajshahi Division. In the dry season the soil sets hard and loses moisture rapidly. It is dificient in organic matter, lime and phosphoric acid and available potash is also dificient. The lowland is suitable for transplanted paddy and is more productive than the highland.

Buildings—The year under report saw to the construction of the following buildings at the farm:—

(1) Office of the Deputy Director of Agriculture, Eastern Circle and his local subordinate officers at a cost of Rs. 15,000.

(2) *Pucca* kitchen, latrine and compound well to twelve Indian staff quarters at a cost of Rs. 24,897.

(3) An implement shed at a cost of Rs. 2,400.

(4) A milk house at a cost of Rs. 1,776-8.

(5) Transformation of the old implement shed into a closed godown for storing paddy at a cost of Rs. 980.

Four of the provincial officers' quarters are still remaining to be improved according to the standardized scale and thirteen more residential quarters for the staff are required for their accommodation at the farm.

The following buildings are also found to be of urgent need:—

(1) A segregation shed for the dairy cattle.

(2) A segregation shed for the farm bullocks.

(3) A gur-making shed.

Further house accommodation for the permanent coolies is also required.

Weather and Rainfall.—The weather was quite seasonable for sugarcane; *aus* paddy and jute which faired well, but the *aman* paddy, which may be called the only profitable crop in this farm, had to be contend with deficient rainfall which told heavily not only on the outturn but enhanced the cost of cultivation. The October rains saved the situation a good deal, otherwise it would have been acute. On account of deficiency of July and August rains, a part of the lowland of medium elevation went without any crop.

The rainfall table is given below:—

Month and year.	Normal.		Actual.	
	Number of days.	Rainfall.	Number of days.	Rainfall.
April 1925	6·7	4·00	8	8·13
May ,, ...	11·3	9·60	13	11·48
June ,, ...	15·2	13·38	10	9·17
July ,, ...	15·75	12·85	23	11·66
August ,, ...	17·40	12·53	14	8·37
September ,, ...	11·70	9·43	11	5·09
October ,, ...	5	4·91	8	7·41
November ,, ...	1·1	0·81	1	0·07
December ,, ...	·4	0·15	..	..
January 1926	·9	0·38	1	0·41
February ,, ...	1·8	1·12	1	0·65
March ,, ...	3·5	2·59	8	4·55

Areas and Crops.—The total cultivated area (206·50 acres) was under the different sections as follows:—

1.	Farm—	
	(*a*) Experimental, including seed propagation	40·57
	(*b*) Non-cultivation	50·19
	(*c*) Commercial	22·19
2.	Fibre Expert	14·83
3.	1st Economic Botanist	44·89
4.	2nd Economic Botanist	3·25
5.	Agricultural Chemist	27·05
6.	Sericulture	3·53
	Total ...	206·50

All expenses for the Fibre Expert's and Agricultural Chemist's cultivation were met as usual from the farm budget and details of cultivation were rendered by the farm. The Economic Botanist has a separate budget of his own for cooly labour, but ploughs with ploughmen and bullocks and carts with cartsmen are supplied by the farm and the cost met by the farm.

Crops grown by the farm, Fibre Expert and Agricultural Chemist are given below :—

Farm.

Name of crop.	Experimental, including seed propagation.	Non-experimental.	Commercial
Aus paddy	11·42	10·12	6·82
Aman paddy	16·32	7·00	15.37
Cowpea for fodder	..	·66	..
Cowpea for seed	8·00	..	..
Sweet potato (for fodder) ..	..	1·37	..
Mustard (after *aus*) . ..	4·00	..	..
Potato	..	·50	..
English vegetable (after fodder experiment)	·75	..	..
Juar	1·50	12·05	..
Japanese millet	2·00	1·00	..
Other fodder crops	1·50	..	..

Agricultural Chemist.

Winter paddy	4·00
Aus paddy	4·27
Sugarcane	8·00
Tobacco (after *juar*)	2·12
Mustard	4·45

Experimental

Juar	2·17
Cowpea (for green manure) ..	3·49
Juar	2·17
Til	0·12
Date palm	1.00
Sunn hemp (for green manure) ..	4·00

Fibre Expert.

Jute (varietal)	8·92
Jute (pure line)	
Jute (propagation)	
Jute (manurial)	
Sunn hemp	·66
Sida	·83
Rhea	·56
Tephrosia	·10
Indigo	·50
Agava	2·60
Aus paddy	·66

Operations during the year.—The operations in the farm during the year under report may be divided into (1) experiments, including propagation of pure line seed; (2) propagation of fodder crops and preservation in silo, (3) cultivation on commercial basis, and (4) preparation of artificial manure—

A. *Experiments*—

(*i*) Soil improvement of highland.

(*ii*) Manurial experiments on (*a*) *aus*, (*b*) winter paddy, (*c*) sugarcane and (*d*) jute.

(*iii*) Varietal experiments on (*a*) winter paddy, (*b*) surgarcane, (*c*) tobacco, (*d*) fodder crops and (*e*) jute.

(*iv*) Seed propagation—*aus* paddy, winter paddy, sugarcane and jute.

B. *Propagation of fodder crop*—
Juar and cowpea were grown for farm cattle.

C. *Cultivation on commercial basis*—

A compact block 22·19 acres comprising of both high and low lands were grown with different crops; separate accounts were kept.

D. *Experiment on English vegetable.*

E. *Preparation of artificial manure*—

With a view to augment the supply of cowdung, this manure was prepared with farm cleaning and sweepings of the cattle shed for general manuring of the farm.

F. *Trial of implements.*

G. *Seed supply.*

1. A. **Experiment**—*Soil improvement*—(*a*) *North Hazi.*—This experiment was started in 1911-12 by Mr. Birt, the then Deputy Director of Agriculture, with a view to find out the lime requirements of the old alluvial red acid soil with and without green manuring and again with and without the addition of phosphoric acid in the form of bonemeal with special reference to the cultivation of cold weather crop which is almost impracticable in these kind of soils. The application of cowdung is included and considered in combination with above manures. The original scheme was for 12 years, but was continued for 13 years, which ended in 1923-24. It was decided to keep on to find out the residual effect of the manures applied in previous years. The year under report was the second year for this. In coming to any conclusion, the scope and intentions of the scheme and the varying requirements of different crops, together with the unevenness of the land, ought to be considered.

The results of 1925-26 are given in Appendix A. A sketch plan showing the arrangements of the plots is also appended in Appendix B.

The results of the orignial scheme may be consulted from the Annual Report. of the farm for 1923-24.

(*b*) **West suti**—*Mr. Basu's plot.*—This is another soil improvement experiment laid out by Mr. Basu in 1908. The poverty of the soil was first supposed to be due to the inability of the soil to retain moisture, and as humus increases the water holding capacity of the soil, these plots were laid out to test the effect of green manure.

In the year under report *juar* was grown, cut and applied to the plots intended for green manuring. Mustard was sown in the *rabi* season.

The experiment was under the direction of the Agricultural Chemist.

2. **Manurial experiment**—(*a*)—*Jute—Central Mirpur.*—The plots, 16 in number, were laid out conjointly by Messrs. Finlow and McLean in 1915. The experiment differed from the previous ones in being simple and in having larger plots separated by broad footpaths. The object was to test the conjoint effect of bone potash and lime with and without green manure. The bone and lime plots have given remarkably good results with jute and *aus* paddy.

Jute was grown in the year under report, but it is regrettable that the crop was heavily attacked with *Rihzoctomia*, and consequently had to be harvested at an earlier stage. Though the yield was small, it still showed difference in the bone and lime plots.

(*b*) *Aus paddy -East Suti*—To decide to what degree the effect is due to lime and bone as indicated in Central Mirpur plots, this experiment was laid out in 1921, bone and rock-phosphates with and without lime were used. The results indicate that both lime and bone severally increases the outturn to a considerable degree, but the conjoint effect is more than that of either singly.

(*b*) *Aus paddy—Residual effect—Red soil poultry area.*—This experiments was started in 1921-22 by the Agricultural Chemist, and was continued in the year under report. The idea of the experiment is to find out the residual effect of manures in subsequent years is applied at a moderately heavy dose in one year on a soil which is typical of a considerable tract of land in the Bhowal pargana. From the result tabulated in Appendix C, it will be seen that bonemeal and lime in conjunction with cowdung are giving better results.

(*c*) *Winter paddy—East Ravine.*—This experiment was started in 1918-19 to find the suitability of steamed and unsteamed bonemeal, fish manure, I. O. P. cake, mustard cake on *aman* paddy. *Indrasail* paddy was grown.

It will be found from the results tabulated in Appendix D that steamed bonemeal gave the highest average yield, the difference being very slight between steamed and unsteamed bone, but with other manures, the difference between 1½ to 3½ maunds, while it is about 5/2 maunds between bonemeal and no manure plot.

(*c*) *Winter paddy—Sunti low.*—This experiment was started in 1921-22 and continued under the guidance of Mr. Carbery, the Agricultural Chemist, to test the efficiency of bone and rock-phosphate with or without lime applied at different intervals. The dose of lime and rock-phosphate was calculated on the availability of 60 lbs. of phosphoric acid.

The Appendix E will show the results obtained.

(*c*) *Winter paddy—Hazi low.*—With a view to find out whether water-hyacinth applied at different times as a manure gives any appreciable difference in the yield of *aman* paddy, this experiment was laid out in the year under report under the instructions of the Economic Botanist. The results obtained tend to show that important factors may be obtained in this investigation.

The experiment will be repeated.

(*d*) *Sugarcane.*—As in previous year *tanna* and C. O. 213 varieties of canes were tried with five different manures. In variance to last year chilean nitrate gave the highest yield of *gur* in case of C. O. 213; ammonium sulphate came the second best, while in the case of *tanna* nitrolim stood first and chilean nitrate following it; castorcake in both cases placed in the third position.

3. **Varietal experiment**—(*a*) *Winter paddy—Economic Botanist's four different varieities.—Indrasail, Dhepi, Tilakkachari and Dudsar* were tried against each other as in previous years. Last seven years' results confirm that placed in similar situation, *Indrasail* is a heavy yielder than the other three.

Results of 1925-26 are tabulated in Appendix F.

(*b*) *Sugarcane.*—Out of the 25 varieties of last year, five of them were discarded, being unsuitable; eight of them were grown for further field observations and propagation and 11 were put to test against yellow *tanna* as standard. In the production of *gur*, neither C. O. 213 nor C.O. 221 could keep them in relative position in the year under report. Unlike last year C. O. 241 came out first followed by C. O. 243.

The cross trial of C.O. 213 against yellow *tanna* was continued in the year under report. C.O. 213 maintained its superior position in the production of *gur*. The disadvantage of C.O. 213 is that it is a soft cane and open to depredation of jackals, and that it cannot stand a high wind.

(*c*) *Tobacco.*—The trial of the four varieties of cigarette tobacco was continued under the supervision of the Agricultural Chemist. Another Madras variety, *Thotnompotty*, which is good filler tobacco for cigar was tried with very satisfactory result. The crop was a heavy one, but was totally damaged by hail storm. A trial was also given with *Motihar* variety both local and from seed obtained from Government Tobacco Farm at Rangpur—both of them did well.

The five new varieties (Pensylvanian, Madras and Cuban) were grown for seed propagation for field trial in the coming year.

The following varieties of tobacco were tried in field scale:—

Cigarette Vouch.

1. Orinocco.
2. White Barley.
3. Ohio.
4. Yellow Prior.

Cigar-making.

1. Thotnompotty (Madras).
2. Havana (three varieties).

Other varieties.

1. Motihar—

Five other varieties—Indian and exotic.
Three varieties—Pensylvanian.

One Madras.
One Cuban.

(*d*) *Fodder.*—Investigation in twenty varieties of *juar*, 19 varieties of other millets, 18 varieties of pulses, two varieties of grass, two varieties of coix, reana and lucerne—both exotic and Indian—were continued. Field trial was given to one of the millets—Japanese variety—which did exceedingly well—both as rain and *kharif* crop. It was sown thrice in one year, first crop in January, second crop in May and third crop in September. It is expected that reana and two of the pulses will also prove of value; field trial will be given to reana in the coming season. The pulses require further multiplication of seeds. A good lot of Japanese millet seed has been produced for distribution to the public and for trial in other farms.

Jute.—Fourteen varieties were put to trial under the direct supervision of the Fibre Expert, and will be dealt fully in his sectional report.

4. **Seed propagation.**—As usual *Kataktara*, *Indrasail*, *Dudsar*, *Tilak-Kachari* and *Dhepi*—all of them, being Economic Botanist's improved varieties of paddies, were grown for propagation of seed. Great care was taken to keep the seeds pure.

Tanna and C. O. 213 varieties of sugarcane were grown for propagation of cuttings. There was a good demand for *Kataktara* (*aus*) and *Indrasail* (*aman*) paddy seeds and *tanna* sugarcane cuttings. The farm could not meet the full requisitions of any of the above.

B. **Fodder crops and its preservation.**—An area of 12·05 acres of *juar* and ·66 acres of cowpea were grown for cattle food. The crop of *juar* of two and a half acres was harvested, cut into pieces by means of the ensilage cutter and a silo was filled in with it. One thousand and two hundred maunds of the stuff was thus made into silage for the feeding of the cattle in dry season.

C. **Cultivation on commercial basis.**—This was continued in the year under report. The block originally selected was reshifted and reduced to 22·19 acres in place of 25·09 in the previous year. The total area of 22·19 acres composed of 6·82 acres of highland and 15·37 of lowland. Separate accounts were kept. The nett profit, excluding the supervision charge, was Rs. 35-4-3 against Rs. 52 per acre in the previous year. A financial statement is given below Detailed cropping results are given in Appendix G:—

Receipts.	Rs.	A.	P.
Aus paddy—157 mds. 36 srs. at Rs. 4-8 per md.	710	9	0
Aus straw—220 mds. ..	55	0	0
Aman paddy—23 mds. 12½ srs. at Rs. 4-8 per md. ..	1,036	6	9
Aman straw—408 mds. 25 srs. ..	408	10	0
Paddy seedlings	50	14	6
Total ..	2,321	8	3
Profit ..	782	7	9

Expenditure.	Rs.	A.	P.
Labour	928	14	6
Bullock charges	272	4	0
Seeds and cost of raising seedlings	301	1	3
Manure	36	12	9
Total ..	1,539	0	6

D. Experiment on English vegetable.—The aim for growing English vegetable is to introduce the best and suitable varieties for the district of Dacca, and eventually for other districts. Experiments are being done on the above lines. A strain of cauliflowers has now been established, which will give a fairly good crop from August to December. Seeds of this variety were raised in the year under report in a fairly large scale for Dacca market and also for trying in other farms of Bengal. This variety will satisfy a need during August to October when vegetables are scarce. Experiments are also being done with cabbages and tomatoes. The last name is a much prized vegetable, but cannot be successfully grown in the laterite soil of Dacca. Another introduction in the vegetable kingdom of Bengal is the sword-bean. It has already found a favourable place in jail gardens for prisoners' diet, and seeds are being raised for supply to the public.

E. Preparation of artificial manure.—In 1924-25 preparation of this manure was taken up as an experimental measure. The material used was dry sugarcane leaves, cattle urine, and ammonium acetate were used in preparing the compost. The compost was prepared in the following way:—

(*a*) *Compost made with urine.*—Eight hundred c. c. of cattle urine was mixed with 60 lbs. of water and well shaken by a stick and finally sprinkled on ten seers of sugarcane leaves and well incorporated. In this way sufficient materials were used till a pit 10′ × 5′ × 5′ was filled in. The treated straw (sugarcane leaves) was spread layer after layer and well pressed. The pit was covered up by means of *chatais* and corrugated sheets to prevent the mass drying up. The pit was filled in in January and the compost was taken up in May next during the time of its application in the field. Ten maunds of straw gave 30 maunds of compost.

(*b*) *Ammonium acetate.*—Twenty-five g. m. of ammonium acetate was dissolved and well shaken in 60 lbs. of water and then sprinkled on ten seers of straw as in the case when urine was used, and the same procedure was followed—

Chemical analysis showed—

Compost made with urine.		Compost made with Amm. acetate.	
Moisture	68·34	Moisture	67·82
Potash (dry basis)	·4262	Potash (dry basis) ..	·2633
Phosphate (dry basis)	·380	Phosphate (dry basis) ..	·2060
Nitrogen (moist basis)	·319	Nitrogen (moist basis) ..	·2199
,, (dry basis)	1·007	,, (dry basis) ..	·655

Cost incurred was about Rs. 4 in case of urine and Rs. 8 in case of ammonium acetate. The price of equal quantity of cowdung near about Dacca is not less than Rs. 4-8.

Field test.—Field test was made to see to the efficacy of each kind of compost as compared with cowdung. One hundred maunds per acre of each kind of compost and cowdung was applied. The average actual outturn of triplicate plots are given below:—

	Md.	sr.	ch.
Cowdung	1	7	1
Urine	1	16	5
Amm. acetate	1	0	1
No manure	0	36	13

1925-26.

In the year under report this manure was made with all available weeds taken out from the fields, grass and other plants obtained from cleaning of roads and drains of the farm, threshing floor refuse and also with spoiled *aus* paddy straw. Use of Ammonium acetate being costly, was discarded. The compost was prepared in rectangular sized stacks in place of pits, and thus minimising the cost. Another departure was that of using a small quantity of bonemeal on each layer of the stuff used.

Mode of preparation.—Rough and ready method was adopted, so as to enable any one to follow the method. After spreading the stuff in layer of 9″ thick,

bonemeal at the rate of one seer for every 50 sq. ft. was scattered evenly over the surface. Cattle urine from the pit which was also mixed up with the washings of the cattle shed and is supposed to contain not less than ten times of the weight of water was sprinkled over the head so as to thoroughly saturate the mass with the mixture. A barrel (ten maunds capacity) of such mixture was required for a heap of 10′ × 5′ × 9″. This was in the case when dry stuff was used, but when green stuff was used, 15 seers of neat urine was required. The method was continued till the head was 5 feet high. The sides and the top was then covered with a layer of turf so as to prevent rapid drying up. After a month, the heap was broken down and remade into a fresh heap.

Time required.—When green stuff was used, a period of two months was the maximum time required, but in case of dry stuff not less than four months were required. We began preparing the compost from 25th January 1925 and finished on 21st August 1925. During this time four heaps measuring 2,800 c. ft. were made.

Cost.—Actual cost incurred was Rs. 201/7/3 (labour Rs. 158/11/3—bonemeal Rs. 42/12. The total outturn of the compost was 2,800 c. ft. The value of this on the basis of cowdung (Rs. 11 per 100 c. ft.) was Rs. 308.

Chemical analysis.—On analysis the compost was found to contain—

	Per 100.	
Nitrogen	0·567	in moist sample.
	1·29	in dry basis.
Moisture	56·05	
Less in ignition	9·19	
Percentage of sand and other insoluble	30·51	calculated in 10 gram moist sample.
Impurities—		
C_aO	0·30	in moist.
	0·68	in dry basis.
M G O	0·08	in moist.
P205	0·28	in moist.
	0·64	in dry basis.
K_2O	0·36	in moist.
	0·83	in dry basis.

This compares favourably with cowdung though the latter has more organic matter and less silica. Nitrogen is about the same in both; while potash is slightly higher in cowdung. Phosphate is more or less the same.

F. **Trial of implements.**—The following new implements were tried in the year under report:—

(1) Ensilage cutter—Type F.

Manufacturers—International Harvestor Co., U. S. A.

Price Rs. 900 with equipments.

Calcutta Agents—Messrs. Macbeth Bros. & Co., Ltd.

The machine cuts green fodder and blows the chuff into the silo direct. A Petter pumping engine is used to drive the blower. It is not sufficiently powerful, but serves the purpose in the absence of a more powerful engine.

(2) Chattanooga Cane Crushing Mill—

Manufacturers—International Harvester Co. of Chicago, U. S. A.

Calcutta Agents—Messrs, Macbeth Bros. & Co., Ltd.

Price Rs. 120 (reduced to Rs. 90 in the current year).

It is compact 3-rollered cane crushing mill and gave entire satisfaction—from the same weight of canes it presses out 12 per cent. of juice better than ordinary 3-rollered mills. It is quite suitable for small farmers.

Capacity three tons of canes per hour with a comparatively stout pair of bullocks.

(3) Hydrohoist—Hand power—

Manufacturer—MacLeod & Co.

Calcutta Agents—Messrs. MacLeod & Co.

Price Rs. 501/9/6.

It is a simple machinery consisting of an endless cup chain fitted on a bifurcated wheel enclosed in a metal box. When the wheel is revolved by means of the handles provided the cup chain on its upward motion brings a column of water and delivers in the box which is provided with a delivery spout. It is quite a simple good machine for raising water; we could raise 4,000 gallons of water per hour from a depth of 10 feet and 2,500 gallons per hour from a depth of 20 feet worked by four men (two alternately) may be recommended for market gardeners and potato cultivators.

(4) Tynes for spring tooth harrow—

Manufactured by Messrs. Tata & Co. These are being tested and will be reported in due course.

The Punjab plough; spring tooth harrow; Disc harrow; Cambridge roller; Zig-zag harrow; Planet Junior hand hoe; Chaff cutter (Richmond); Renewick's cane crushing mills—Three rollered; Alfa Laval (Viola) cream separator, Oshkosh pump and Petter's pump continued to give good works.

G. **Seed supply.**—Orders for seeds mainly paddy and sugarcane cuttings (farm produce) supplied to the public generally pass through Dacca Farm Seed Store; details of this may be found under the head "Seed store". The following seeds and manures (purchased) were, however, also supplied to other farms:—

	Md.	sr.		Md.	sr.
Bonemeal	12	3	Japanese millet ..	2	22
Lime	6	25	Cowpea ..	0	½
Castorcake	0	2½			
Nitrate of potash	0	2½			
Superphosphate	0	1½			

Cattle breeding.—The dairy was the sixth year of its existence and kept up to evolve a herd suitable for Eastern Bengal. In addition to this Red Sindhi herd, which is meant for milch cattle, a few animals of Tharparkar breed were brought from Rangpur Farm during the year under report. An Ayrshire pure breed bull was also brought from Home with a view to cross country cows with Ayrshire bull could produce a herd of draft animals.

Some fine bulls of Sindhi breed were produced to maturity within the year and were sent out—one sent to Faridpur Farm and two sold to Sealdah Milk Union Society.

The total strength of herd was as follows:—

	1st April 1925.	31st March 1926.
A. Sindhi herd—		
1. Stud bull	2*	1
2. Cows	11	14
3. Heifers	5	5
4. Young bulls	7†	7
5. Cow calves	8	6
6. Bullocks	8	11

* One shown under farm cattle in 1924-25.
† Seven shown under farm cattle in 1924-25.

31st March 1926.

B. Tharparkar herd—

1.	Cows	7
2.	Heifers	15
3.	Stud bull	1
4.	Young bull	1
	Ayrshire bull	1

There was an epidemic of rinderpest amongst the cattle on account of which one stud bull and two young bulls died; other diseases claimed a mortality of three bull calves and five cow calves. Protective inoculation was done twice, and to make the animals immune against rinderpest, serum simultaneous inoculation was given to all the cattle. There was no death due to this.

A few animals of the Tharparkar herd brought foot and mouth disease, but it was detected in time, and the whole herd was kept under strict segregation. The disease was confined amongst the Tharparkar herd, but there was no casuality.

A statement showing the yield of milk of individual cow in the last lactation and in the year 1925-26 are given in appendices H and I. A profit and loss statement has also been drawn up which may be found in Appendix J.

Farm cattle.—The total number of bullocks is 30 pairs, some ten pairs of bullocks require replacing, but fund could only be had for five pairs, which were bought at the end of the year.

As bullocks are the main draft power for cultivation, a great strain was felt for want of suitable numbers. The country stud bull was sold off.

As in the Sindhi herd rinderpest epidemic broke out amongst the bullocks also; casuality due to it was only three (including the Sindhi cross bred). One bullock died of other disease.

Two rinderpest preventive inoculations were given followed by inoculation by serum simultaneous method.

Seed store.—The seed store which is located within the farm was maintained and was under the charge of an Overseer. The main duty of the store is to supply the pure and improved jute seed evolved by the department, but large stocks of paddy seed will have to be dealt with from now onwards.

In the year under report, it was arranged with the growers that the department will take only 30 maunds of seed of *Capsularis* from each of the growers and 500 maunds of *Olitorius* was arranged with only one of the growers. The excess seed to be grown by each of them will be indented by Mr. A. L. Godden, the Agent for the sale of Government jute seed. On this arrangement about 310 maunds of *Capsularis* and about 486 maunds of *Olitorius* seed were received and dealt with.

A list of various seeds passed through the seed store is given below:—

Jute seed.

	Md.	sr.	ch.
Capsularis	309	34	8
Green Olitorius	485	36	4

Sugarcane cuttings.

C.O. 213	1,100
Tanna	35,636
Other varieties	531

Paddy seed.

		Md.	sr.	ch.
1.	*Indrasail*	364	30	0
2.	*Dudsar*	19	30	0
3.	*Kataktara*	151	10	0
4.	Other varieties ..	2	20	0

Manures.

		Md.	sr.	ch.
1.	Castorcake	4	30	0
2.	Bonemeal	14	0	0

Other kind of seeds.

		Md.	sr.	ch.
1.	Pusa wheat	0	19	0
2.	Mustard seed ..	2½	0	0

Dispensary.—The dispensary is now located in the new buildings constructed last year. It is under the charge of a senior Sub-Assistant Surgeon. A compounder is also attached to it.

On the whole the health of the farm was good, though there were a few case of typhoid, suspected kala-azar and dysentery. There was a sad case of snake bite which ended fatally.

The dispensary is in badly need of a whole-time servant and a sweeper.

During the year under report, the dispensary was once visited by the Surgeon-General and frequently by the Civil Surgeon.

Agricultural school.—One secondary agricultural school is located within the farm. It has two classes. There are two hostels—one for Hindu and another for Muhammadan boys—attached to it. The school teachers both theory and practice in agriculture and rural carpentry and smithy. Departmental demonstrators also get further training in the school. Each student is allotted one plot of land, which he cultivates by his own hands; the value realised from the produce of these plots goes to their joint funds and is mainly spent in sports.

The total area under the school is about 10 acres, out of which 5 acres are under cultivation.

The school is under the direct charge of the Fibre Expert to the Government of Bengal.

Sericulture.—The sericultural nursery which is located within the farm had originally an area of 1·01 acres; in the year under report, another 1;50 acres of land have been made over to it. It is managed by an officer specially trained in sericulture, who is directly responsible to the Deputy Director of Sericulture.

It has proved beyond doubt that mulberry grows very luxuriantly in this tract of land and that cocoon thrive well. It is consequently a paying concern. It is time that some demonstrations are made in the neighbouring villages.

Training of students.—Three boys of the cultivator's class from the neighbouring villages have been taken for training in the farm. They do actual field works with the farm coolies and are paid similar wages. One of them has been put in the dairy. These boys joined the farm from 1st February 1926.

Financial Statement.—The statement showing the receipts and expenditure of the farm during the year under report will be found in Appendix "K".

Establishment.—There was no change in the personnel of the farm staff. All the officers worked well and satisfactorily.

Visitors.—His Excellency the Governor of Bengal and the Hon'ble Member in charge of Agriculture and Industries visited the farm during the rains. Dr. Shaw, Imperial Economic Botanist, visited the farm once, and the veterinary Adviser to the Government of Bengal thrice during the year. Maharaja of Tippera with the Political Agent and many other gentlemen, official and non-official, paid visits to the farm.

J. N. SIRCAR,

Deputy Director of Agriculture,
Eastern Circle (Offg.).

APPENDIX A

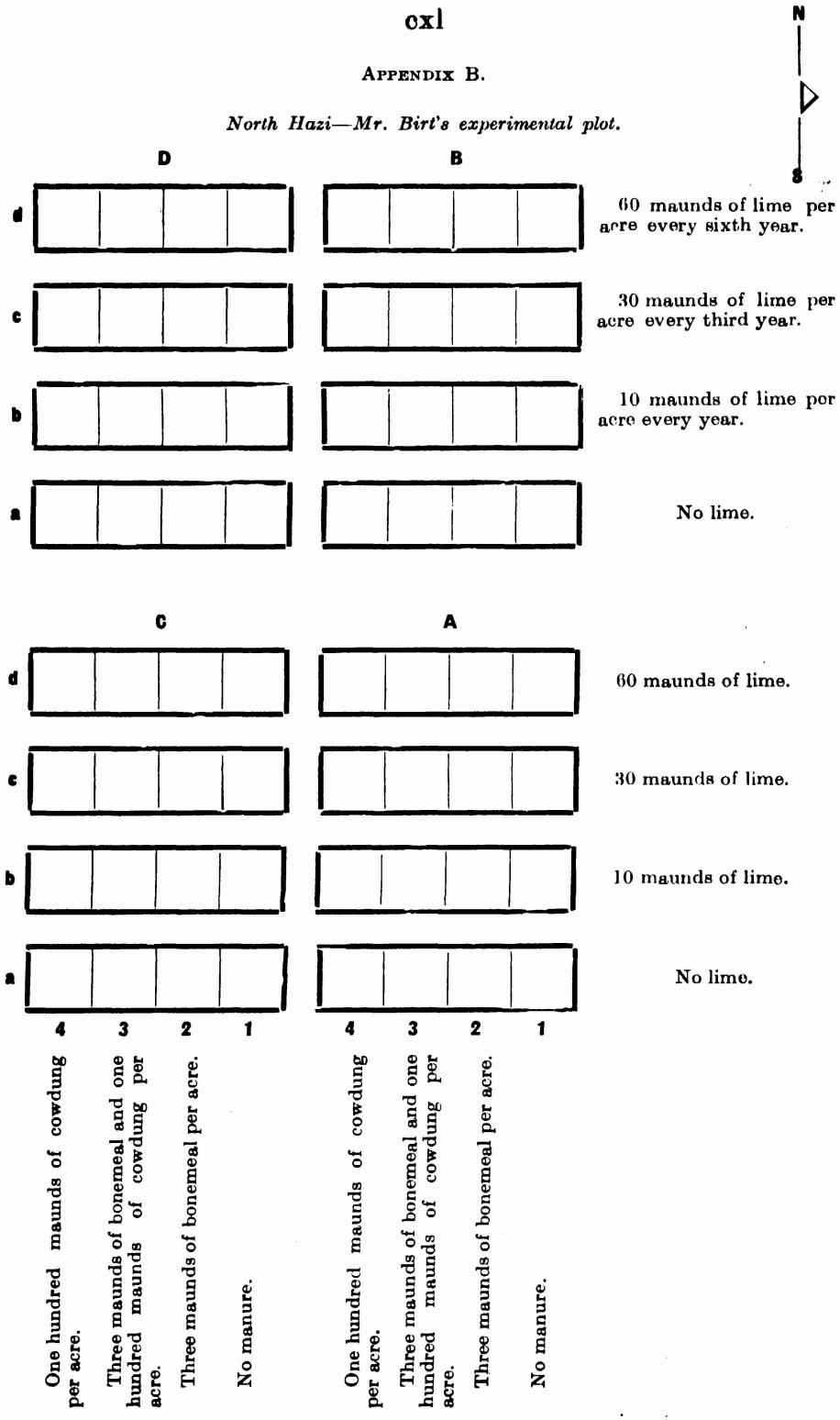
Results of soil improvement experiment started in 1911-12 in North Hazi, Mr. Birt's plot, Dacca Farm.

Name of manures and quantity per acre.	Average outturn for 13 years from 1911-12 to 1923-24.						Residual effect—1st year.				Residual effect—2nd year.				Remarks.
	Outturn of *aus* paddy per acre in lbs.		Outturn of mustard per acre in lbs.		Outturn of *matikalai* per acre in lbs.		Outturn of *aus* paddy per acre in lbs.		Outturn of *matikalai* per acre in lbs.		Outturn of *aus* paddy per acre in lbs.		Outturn of mustard per acre in lbs.		
	Without green manure.	With green manure.	Without green manure.	With green manure.	Without green manure.	With green manure.	Without green manure.	With green manure.	Without green manure.	With green manure.	Without green manure.	With green manure.	Without green manure.	With green manure.	
No manure	696	1,053	19	22	158	139	448	1,280	168	148	672	1,706	6	8	Original scheme completed in 1922-23.
Lime 10 maunds every year ..	728	1,372	50	24	177	145	272	1,560	254	152	557	1,493	49	92	
Lime 30 maunds every third year.	869	1,308	115	46	187	147	728	1,504	186	96	820	1,197	180	188	
Lime 60 maunds every sixth year.	725	1,338	95	61	194	178	976	1,408	212	67	877	1,549	205	160	
Bonemeal 3 maunds every year	942	1,431	94	96	187	182	712	1,728	128	88	680	1,640	14	11½	
Bonemeal 3 maunds every year and lime 10 maunds every year.	712	1,426	236	327	224	190	240	1,248	216	128	762	1,148	116	172	
Bonemeal 3 maunds every year and lime 30 maunds every third year.	858	1,164	254	332	269	206	488	1,368	200	96	885	1,886	278	311	
Bonemeal 3 maunds every year and lime 60 maunds every sixth year.	900	1,371	292	264	209	293	736	1,408	168	184	860	1,738	148	237	
Bonemeal 3 maunds every year and cowdung 100 maunds every year.	1,254	1,553	202	235	213	188	1,352	1,824	200	288	734	1,600	18	20	
Cowdung 100 maunds, bonemeal 3 maunds and lime 10 maunds every year.	971	1,753	384	418	258	213	1,184	2,144	212	68	574	1,074	123	131	

Cowdung 100 maunds, bone-meal 3 maunds every year and lime 30 maunds every third year.	977	1,774	399	420	269	246	1,184	2,048	68	176	803	1,853	213	311
Cowdung 100 maunds, bone-meal 3 maunds every year and lime 60 maunds every sixth year.	967	1,686	410	359	285	250	1,352	2,024	232	232	820	1,984	166	180
Cowdung 100 maunds every year.	1,149	1,287	130	181	196	204	1,392	1,808	200	100	638	1,622	1¼	2
Cowdung 100 maunds and lime 10 maunds every year.	976	1,767	110	227	252	211	1,104	2,328	138	82	802	1,098	49	94
Cowdung 100 maunds every year and lime 30 maunds every third year.	989	1,745	232	218	269	240	1,416	2,216	264	241	984	1,934	213	172
Cowdung 100 maunds every year and lime 60 maunds every sixth year.	1,093	1,762	259	231	289	244	1,376	1,936	240	154	910	2,106	78	82

Appendix B.

North Hazi—Mr. Birt's experimental plot.



APPENDIX C.

Result of Red soil plot—Manurial experiment—Residual effect for the year 1925-26. Manure applied in 1921-22.

Serial No.	Application of manure per acre.	Acreage.	Outturn per acre.		Average outturn per acre.	
			Main crop.	Bye-products.	Main crop.	Bye-products.
			Mds. srs. chs.	Mds. srs. chs.	Mds. srs. chs.	Mds. srs. chs.
1	No manure ..	·05	3 27 8	14 20 0		
2	Bonemeal (3 mds.) ..	·05	10 20 0	15 0 0		
3	Bonemeal (3 mds.) .. Cowdung (300 mds.) ..	·05	13 27 8	20 0 0		
4	Lime (60 mds.) ..	·05	6 17 8	15 0 0		
5	Bonemeal (3 mds.) .. Lime (60 mds.) ..	·05	5 0 0	13 0 0		
6	Bonemeal (3 mds.) .. Lime (60 mds.) .. Cowdung (300 mds.) ..	·05	6 17 8	15 0 0	8 18 0	19 28 14
7	Lime (60 mds.) .. Cowdung (300 mds.) ..	·05	13 20 0	20 0 0		
8	Bonemeal (3 mds.) .. Lime (60 mds.) .. Cowdung (300 mds.) ..	·05	5 22 8	17 20 0		
9	Bonemeal (3 mds.) .. Lime (60 mds.) .. Cowdung (600 mds.) ..	·05	11 10 0	20 0 0		

APPENDIX D.

Results of experimental plots—Block B, 1925-26.

Name of plot.	Name of crop.	Name of manure.	No. of plot.	Area in acre.	Outturn per acre.		Average outturn per acre.	
					Paddy.	Straw.	Paddy.	Straw.
					Mds.srs.chs	Mds.srs.chs	Mds.srs.chs	Mds.srs.chs
East Ravine.	*Indrasail* paddy.	I. O. P. cake 395 lbs. per acre.	31	·10	18 0 0	36 0 0		
		Ditto ..	36	·10	19 5 0	38 10 0	18 22 8	37 5 0
		Mustard cake 350 lbs. per acre.	33	·10	18 15 0	36 30 0		
		Ditto ..	37	·10	19 22 8	39 5 0	18 38 12	37 37 0
		Shrimp waste 363 lbs. per acre.	39	·10	23 25 0	47 10 0		
		Ditto ..	40	·10	17 10 0	32 20 0	19 37 8	39 35 0
		Steamed bone 246 lbs. per acre.	43	·10	22 35 0	45 30 0		
		Ditto ..	47	·10	19 22 8	39 5 0		
		Ditto ..	52	·10	23 17 8	46 35 0	21 25 0	43 10 0
		Unsteamed bone 246 lbs. per acre..	46	·10	24 0 0	48 0 0		
		Ditto ..	51	·10	19 32 8	39 25 0	21 26 4	43 32 8
		No manure ..	42	·10	16 12 8	32 2 0	16 12 8	32 25 0

Appendix E.

Results of experimental plots, Block B, 1925-26.

No. of plot.	Name of plot.	Name of crop.	Name of manure.	Area in acres.	Outturn per acre.	
					Paddy.	Straw.
					Mds. srs. ch.	Mds. sr.
3	Suntilow	*Indrasail* paddy.	Bone every second year. Lime every year.	·33	33 12 9	24 18
4			Bone every year, lime every year.	·33	11 28 0	23 16
8			Bone every third year, lime every year.	·33	10 33 8	21 27
9			Lime every year ..	·33	11 4 0	22 8
10			Rock phosphate every year..	·33	7 8 8	14 17
5			No manure ..	·33	5 16 0	10 32
16			Rock phosphate and lime every year.	·33	6 0 0	12 0
13			Bone every year ..	·33	8 22 0	17 4
17			Bone every second year ..	·33	7 32 0	15 24
14			Bone every third year ..	·33	10 2 0	20 4
12			No manure ..	·33	7 20 0	15 0
18			No manure ..	·33	10 9 8	20 19

Appendix F.

Results of experimental plots, Block B, 1925-26.

No. of plot.	Name of plot.	Name of crop.	Area in acres.	Outturn per acre.		Average outturn per acre.	
				Paddy.	Straw.	Paddy.	Straw.
				Mds. sr. ch.	Mds. sr. ch.	Mds. sr. ch.	Mds. sr. ch.
11	East Ravine.	*Indrasail* paddy	·20	21 0 0	42 0 0		
14		Ditto ..	·17	19 4 11	38 9 6		
17		Ditto ..	·08	20 6 4	40 12 8	20 31 1	41 22 2
22		Ditto ..	·07	21 16 0	42 32 0		
27		Ditto ..	·07	22 9 4	44 18 8		
30		Ditto ..	·14	20 30 6	41 20 12		
7		*Dhepi* paddy ..	·19	13 24 12	27 9 8		
10		Ditto ..	·11	14 28 10	29 17 4		
15		Ditto ..	·10	15 32 8	31 25 0	13 20 11	27 1 6
19		Ditto ..	·08	11 35 0	23 30 0		
23		Ditto ..	·11	11 1 0	22 2 0		
26		Ditto ..	·08	14 8 9	28 17 2		
8		*Tilak Kachari* paddy.	·21	9 21 0	19 2 0		
9		Ditto ..	·14	10 0 0	20 0 0		
16		Ditto ..	·12	10 33 4	21 26 8	11 26 9	23 13 2
20		Ditto ..	·11	9 27 10	19 35 4		
24		Ditto ..	·07	10 0 0	20 0 0		
25		Ditto ..	·08	9 27 0	19 15 0		
12		*Dudsar* paddy	·17	15 10 5	30 20 10		
13		Ditto ..	·13	17 20 0	35 0 0		
18		Ditto ..	·09	17 4 7	34 28 14		
21		Ditto ..	·11	17 4 1	34 8 2	16 11 2	32 22 4
28		Ditto ..	·11	13 23 2	27 6 4		
29		Ditto ..	·08	16 35 0	33 30 0		

APPENDIX G.

Statement showing profit and loss account of the area under Economic Proposition in Block, 1925-26.

Name of plot.	Acreage.	Name of crop.	Total cost of cultivation.	Paddy.	Straw.	Total value of yield.	Profit.	Loss.
1	2	3	4	5	6	7	8	9
			Rs. A. P.	Mds. srs. chs.	Mds. srs. chs.	Rs. A. P.	Rs. A. P.	Rs. A. P.
1. South Mustertak ..	2·33	*Aus* paddy	130 6 6	42 12 6	63 0 0	206 2 3	75 11 9	....
2. South Mirartak ..	2·00	Ditto ..	182 14 9	50 29 2	75 0 0	247 0 3	64 1 6	....
3. North Mirartak ..	2·49	Ditto ..	134 11 0	64 34 8	82 0 0	312 6 6	177 11 6	....
4. Zalabisra "A" ..	4·95	*Aman* paddy	344 3 6	68 13 4 9 0 4	136 26 8 18 0 8	502 11 6	158 8 0	....
5. Zalabisra "B" ..	3·99	Ditto ..	271 10 0	73 20 4	147 0 8	477 12 6	206 2 6	....
6. Zalabisra "C" ..	3·75	Ditto ..	286 8 3	62 18 2	132 36 4	413 15 3	127 7 0	....
7. Zalabisra Central ..	2·68	Ditto ..	188 10 6	17 0 10	34 1 4	161 8 0	....	27 2 6
	22·19	....	1,539 0 6	388 8 8	688 25 0	2,321 8 3	809 10 3	27 2 6

Net profit Rs. 782-7-9 (*i.e.*, Rs. 35-4-3 per acre).

APPENDIX H.

Statement showing the quantity of milk given by each cow during last lactation.

Serial No.	Names of cows.	Number of days in milk.	Total quantity of milk given.	Average per day.	Maximum in one day.	Minimum in one day.
			lbs.	lbs.	lbs.	lbs.
1	Lily	300	3,529½	13·76	23	3
2	Bidya	252	2,378½	9·48	17½	1
3	Bhagabati ..	39	67	1·71	4	½
4	Rani	89	837½	9·40	15	½
5	Nina	196	1,300½	6·63	12	½
6	Dorothy ..	289	1,954	6·76	15	½
7	Rosy	283	2,185	7·72	15	½
8	Rajia	257	1,777½	6·87	10	½
9	Mira	190	991	5·21	12	½
10	Hena	225	1,253	5·56	11	1
11	Jamuna ..	121	1,016½	8·39	15	1
12	Bela	109	854½	7·83	16	½

APPENDIX I.

Statement showing the total quantity of milk produced by each cow during 1925-26.

Serial No.	Names of cows.	Number of days in milk.	Total yield of milk in lbs.	Average per day.	Maximum in one day.	Minimum in one day.
			lbs.	lbs.	lbs.	lbs.
1	Lily	157	2,363½	15	22	10½
2	Bidya	252	2,395	9·5	19	1
3	Bhagabati ..	179	1,876½	10·48	15½	½
4	Rosy	255	1,772½	6·94	15½	1
5	Rajia	214	1,532	7·15	10	½
6	Nina	196	1,300½	6·63	12	½
7	Bela	228	1,196½	5·28	16	½
8	Jamuna ..	119	1,016½	8·53	15	½
9	Hena	225	1,253	5·56	11½	1
10	Rani	89	837½	9·40	15	½
11	Mira	186	989½	5·31	12	½
12	Sakuntala ..	46	525½	11·41	13	6½*
13	Browney ..	61	188½	3·08	4½	1†
14	Sita	61	388	6·36	11	1
15	Dorothy ..	262	1,573	6·00	13	½
16	Panbati ..	37	315	8·51	10	7

* Dam Lily. † Sire Charley.

Total yield of milk of sindhi herd from 1st April 1925 to 31st March 1926 = 19,208 lbs.

Average daily yield for the year = 52·6 lbs.

Appendix J.

Financial statement, Cattle Breeding Section, 1925-26.

Receipts.

		Rs.	A.	P.
1.	Value of milk sold, Sindhi herd	783	2	0
2.	Value of milk sold, Tharparkar herd	126	13	6
3.	Value of milk fed 10 calves, Sindhi herd	436	2	6
4.	Value of milk fed 10 calves, Tharparkar herd ..	21	3	6
5.	Value of milk spoiled ..	0	14	6
6.	Bills outstanding ..	59	11	0
7.	Value of live-stock sold ..	400	0	0
8.	Value of live-stock transferred to Faridpur ..	200	0	0
9.	Value of live-stock on 1st April 1925, Rs. 6,350 Value of live-stock on 31st March 1926 Rs. 8,000 ..	1,650	0	0
10.	Value of live-stock, Tharparkar, on 31st March 1926	3,760	0	0
	Total ..	7,437	15	0

Expenditure.

		Rs.	A.	P.
1.	Establishment ¾ pay of Assistant Superintendent in charge	490	0	0
2.	Labour	1,023	10	0
3.	Ration	3,007	9	3
4.	Medicines	65	2	0
5.	Veterinary allowance ..	80	0	0
6.	Value of live-stock received from Rangpur ..	3,900	0	0
7.	Value of sundries ..	10	5	0
8.	Value of dead-stock in hand— on 1st April 1925, Rs. 548-8 on 31st March 1926 Rs. 543-6.	5	2	0
9.	Depreciation 10 per cent.	1,231	4	0
	Total ..	9,813	0	3

Appendix K.

Financial statement of Dacca farm for the year ending 31st March 1926.

Heads of debits.	Amount of each sub-head. Rs.	A.	P.	Amount of each head. Rs.	A.	P.
1. Sale proceeds in hand at the commencement of the year ..	25	1	6	25	1	6
2. (*a*) Value of last year's farm produce in stock at the commencement of the year ..	4,013	12	3	....		
(*b*) Value of purchased store and other raw materials of the previous year in stock at the commencement of the year ..	3,991	12	3	8,005	8	6
3. Amount of outstanding bills payable by the farm at the end of the year ..	2,082	3	6	2,082	3	6
4. Amount of unrealised sale proceeds due to the farm at the commencement of the year ..	377	0	9	377	0	9
5. Value of tools, plants and other agricultural implements in hand at the commencement of the year ..	21,000	0	0	21,000	0	0
6. Amount drawn from the treasury during the year—						
(*a*) Pay and allowance of the staff ..	14,210	14	0	....		
(*b*) Purchase and feed of cattle ..	7,299	10	9	....		
Purchase of seeds, manures and implements ..	2,508	13	0	....		
Wages of labourers	19,992	8	9	....		
Reclamation ..	2,904	14	0	....		
Petty construction and repairs ..	9,196	2	0	....		
Railway, steamer freight and cartage ..	299	11	0	....		
Workshop ..	1,199	4	9	....		
Medical aid ..	730	10	6	....		
Purchase and repairs to furniture ..	39	14	0	....		
Office expenses and miscellaneous ..	2,399	10	9	....		
Rents, rates and taxes ..	84	0	0	....		
(c) Cost of stores, seeds, farm produce, etc., received from other farms within or outside the province by adjustment of book transfer ..	3	0	0	60,869	1	6
7. Value of seeds, stores etc., received from other farms by stock adjustment ..	2	10	0	2	10	0
8. Value of live-stock at the commencement of the year..	9,100	0	0	9,100	0	0
Total ..	....			1,01,461	9	9
Deduct on account of capital expenditure				9,196	2	0
				92,265	7	9
Net expenditure—excess of receipts over expenditure, *i.e.*, profits ..	....			....		
Grand total ..				92,265	7	9

Heads of credits.	Amount of each sub-head. Rs.	A.	P.	Amount of each head. Rs.	A.	P.
1. Sale proceeds in hand at the end of the year ..	3	8	6	3	8	6
2. (*a*) Value of farm produce in stock for sale or farm use ..	5,255	15	3	....		
(*b*) Value of purchased store and other raw materials in stock at the end of the year including value of medicines and other dispensary sundries	5,883	11	0	11,139	10	3
3. Amount of outstanding bill payable by the farm at the commencement of the year ..	954	5	9	954	5	9
4. Amount of unrealised sale proceeds due to farm at the end of the year ..	194	10	9	194	10	9
5. Value of tools, plants and other agricultural implements in hand at the end of the year ..	23,838	0	0	23,838	0	0
6. Amount paid into the treasury during the year—						
(*a*) Amount credited in cash into treasury	10,680	11	0	....		
(*b*) Amount credited by book transfer ..	225	8	6	10,906	4	3
7. (*a*) Value of stores, seeds, etc., supplied to seed store experts and other farms by stock adjustment during the year	2,799	7	0	....		
(*b*) Value of seeds, stores, etc., used at the farm ..	3,221	0	0	....		
(*c*) Value of live-stock supplied to other farms by stock adjustment ..	200	0	0	6,220	7	0
8. Value of live-stock at the end of the year ..	13,743	0	0	13,743	0	0
Total ..	....			66,999	14	6
Excess of expenditure over receipts, *i.e.*, loss	....			25,265	9	3
Grand total ..	....			92,265	7	9

Depreciation of 20 per cent. on tools, implements, furniture and miscellaneous stores, and 10 per cent. on animals have been taken into calculation.

APPENDIX XIX.

Annual Report of the Comilla Farm for the year 1925-26.

Site.—The farm is situated one mile west of Comilla near the railway station The Grand Trunk Road from Dacca to Chittagong lies on the northern boundary of the farm.

Actual cultivation of the farm commenced in April 1920.

Area.—The area of the farm is 20 acres. Of this, 4½ acres are occupied by quarters, office, roads and drains, etc.; one acre by three tanks; and 1·5 acres high land and 13 acres low lands are under cultivation.

General aspect.—The farm is divided into four rectangular blocks. Each block with one exception is subdivided into 1/10th acre sub-plots. There is a central tank covering an area of 1 bigha 14 cottahs, and one small tank in the north-east corner and another in the south-west corner on the areas of 5½ cottahs and 10½ cottahs respectively. These tanks serve mainly the purpose of irrigation and drinking.

Types of land.—The farm is mainly paddy land. Only 2/3rds of an acre was high land suitable for cultivation of sugarcane, potatoes and *rabi* crops. But by deepening 2/3rds acre in Block II, another 2/3rds acre has been raised for growing high land crops. This portion of the block is meant for cultivation of deep-water paddy; but until better arrangements for drainage are made, cultivation of deep water paddy cannot be expected to be done satisfactorily.

Drainage.—The farm suffers from want of proper drainage. The surrounding land is higher than the farm land, and there being no proper drainage line, the paddy area, which covers the major portion of the farm, suffers to a great extent during heavy rainfall.

Soil.—The following is the analysis of the soil and sub-soil:—

	Surface-soil.	Sub-soil.
N.	·11	·07
K_2O	1·23	1·24
P_2O_5	·15	·10
CaO (lime)	·35	·25
MgO	·34	·32
Silicate	77·33	77·79

This is a fairly fertile soil. The soil of low land is now to be analysed.

Season.—The following statement shows the rainfall during the year:—

Month and year.	Actual rainfall.	Number of rainy days.	Normal.
January 1925	·28	2	0·41
February ,,	·87	2	1·08
March ,,	·85	2	2·84
April ,,	6·45	7	6·08
May ,,	20·21	9	11·40
June ,,	7·48	14	18·22
July ,,	11·82	19	15·47
August ,,	10·67	15	15·31
September ,,	11·02	16	10·86
October ,,	8·04	7	5·98
November ,,	Nil	Nil	0·95
December ,,	Nil	Nil	0·32
	77·70	....	89·92
January 1926	·30	2	0·41
February ,,	·57	1	1·08
March (up to 28th) 1926	3·87	5	2·84

The season was a fair one for *kharif* crops, but the heavy early rains and cloudy days from the last week of February till the middle of March delayed harvest of sugarcane and its planting.

Rabi crops did also suffer a great deal from untimely heavy showers.

Operations during the year.—Growing of crops of paddy, sugarcane, jute, gram, peas, *rahar*, oats and peas and Guinea grass as fodder, fruit trees (cocoa-nuts, plantains, *lichi*, etc.), doing the experiments with *Indrasail versus* local *Chaplash* and *Manikraj* and the experiment with 2 to 3 seedlings in each hole *versus* the local method of putting 8—15 seedlings in each hole.

Crops.—

Aus.	Area in bighas.	Outturn	Outtturn per bigha.
	B. c.	Md. sr.	Md. sr.
Dholi aus on low land	17 2	87 18	5 6
Kataktara on high land*	0 14	4 26	6 30

* Was badly damaged by the stem-borer.

Kataktara gave good results on high land in previous years and proved superior to local *Dholi aus*. Though damaged by stem borer this year too, *Kataktara* defeats *Dholi*.

Aman.	B. c.	Md. sr.	Md. sr.
Indrasail—			
Block I	10 1	77 20	7 2
Block II	8 9	67 20	8 0
Block III	7 10	45 20	6 5
Block IV*	11 0	43 35	4 0
Drains	0 10	2 30	5 10

* Much damaged by flood.

Experiment with Indrasail versus Chaplash versus Manikraj.

Year and variety.	Area.	Outturn.	Outturn per bigha.	Actual straw per bigha.
	B. c.	Md. sr.	Md. sr.	Md. sr.
1925-26.				
Indrasail	0 18	9 0	10 0	12 30
Chaplash	0 18	8 0	8 35	10 4
Manikraj	0 18	8 20	9 18	10 4
1924-25.				
Indrasail	0 18	3 20	3 36	....
Chaplash	0 18	4 0	4 18	....
Manikraj	0 18	4 0	4 18	....

The paddy of the year was seriously damaged by flood at harvest time. *Indrasail* suffered the most, therefore the results do not say everything.

1923-24.				
Indrasail	0 18	7 17	8 10	10 37
Chaplash	0 18	8 18	9 15	12 37
Manikraj	0 18	8 1	8 37	10 10

The results are not yet conclusive and the experiment will be continued.

Transplanting experiment with 2 to 3 seedlings in each hole *versus* cultivators' method of putting 8—15 seedlings in each hole.

	Area.	Outturn.
	B. c.	Md. sr.
2 to 3 seedlings ..	1 4	10 34
Cultivators' method ..	1 4	10 0

Two to three seedlings gave better result and much seed can thus be saved. The experiment will be continued.

Jute.—

Kind of land.	Plot No.	Area.	Outturn.	Outturn per bigha.	Remarks.
		C. ch.	Md. sr.	Md. sr.	
High ..	Block II— B 2 ..	10 0	5 26	11 12	G. O.
High ..	Block III— C 8 ..	5 6	3 19	12 30	K. B.
Rather low ..	Block II— C2C3 ..	13 0	5 22	8 15	K. B.

Sugarcane.—

Plot No.	Area.	Outturn *gur*.	Outturn per bigha.	Remarks.
	C. ch.	Md. sr.	Md. sr.	
Block III— C4	5 0	6 5	24 20	Ratoon *tanna*.

Newly planted cane on 11 cottahs not yet harvested owing to late rains.

Rabi crops.—These were grown on small areas: they were partly damaged by the occasional rains from the last week of February till the middle of March.

Crop.	Plot No.	Area.	Outturn.	Outturn per bigha.	Remarks.
		C.	Md. sr.	Md. sr.	
Gram ..	OC2 ..	4	0 28	3 20	Damaged by rains at the maturity period.
Peas ..	OC2 ..	4	0 21	2 15	Ditto.
Potato ..	OC and Block III— C10 * ..	7	7 16	21 10	Ditto.

Potato has never done well here. *Rahar* was grown as an edge crop and an outturn of 2 maunds 22 seers was obtained from 150 plants.

Fodder Crops.—

Crop.	Plot No.	Area.	Outturn.	Outturn pe bigha.
		C. ch.	Md. sr.	Md. sr.
Oats and peas* ..	Block II— C2 C3 ..	4 0	5 30	28 30
	Block III— C5 C6	5 0	2 4	8 20
	OC6	2 0	3 20	35 0
Guniea grass ..	Block III— C and C7 ..	2 10	32 7	241 0

* Was damaged at the time of construction of the menials shed.

In these days of scarcity of fodder, Guinea grass is a very paying crop. It thrives well in this part of the district. It is hoped that the public will gradually take up its cultivation by adopting the method from us.

Plantains.—Rampal and Sonapur bananas are being grown for the last four years and the results are shown below. Sonapur varieties have proved harder and more yielding:—

Year.	Plot No.	Area.	Cost.	Sale-proceeds.	Net income per bigha.
		C.	Rs. A. P.	Rs. A. P.	
1922-23 ..	Block II—				
	B$_1$ B6* ..	5½	11 5 2	Nil	Rupees 295 in four years or the average yearly income is Rs. 74.
1923-24 ..	Ditto ..	5½	2 5 4	16 14 6	
1924-25 ..	Ditto ..	5½	5 1 0	36 4 0	
1925-26 ..	Ditto ..	5½	5 12 6	52 6 6	
	....	..	24 8 0	105 9 0	

* Planted late in July-September.

Cocoa-nuts.—The farm has now 78 plants along the bank of the central tank and along roadsides. Most of them are now in the fifth year. Some have begun to flower. They are very promising still, but the Rhinocerous beetle has already begun to damage badly.

Other fruit trees.—The last bit of high land, namely, the bank of tanks and edges of plots, is being utilised in fruit cultivation—*Lichi, sapota,* custard apple grown as side crops for want of space. They have not begun to fruit yet. Their growth is satisfactory.

Cultivation on economic basis.—Bolck II low land was kept as the area for the purpose. *Dholi aus* on 3 bighas 4½ cottahs and *Indrasail* on 8 bighas 9 cottahs of the area were grown: the details of costs and outturn, etc., are shown in Appendix B.

Distribution of seed.—Three maunds of *Kataktara* and 20 maunds of *Indrasail* were distributed and sold for seed purposes. Twelve maunds of K. B. jute seeds were also sold. No more seeds were available, though the demand was very great.

Cattle.—There are three pairs of bullocks. Their conditions is good. There was no casualty during the year.

Practical training in agriculture.—Two boys (cultivators' sons) are being trained to learn the improved methods of cultivation and to learn about improved seeds.

Receipts and expenditure.—Detailed statement showing the receipts and expenditure will be found in Appendix A.

Establishment.—Babu Binode Lal Mukherjee, District Agricultural Officer, was in charge of the farm. He is an earnest worker. He managed both farm and district work with the help of two demonstrators.

Visits and inspection.—The farm was frequently inspected by the Deputy Director of Agriculture and visited twice by the Collector.

J. N. SIRKAR,

Deputy Director of Agriculture,
Eastern Circle (Offg.).

APPENDIX B.

Comilla Farm.

Economic area for 1925-26.

Block II—lowland.

Name of plot.	Kind of paddy.	Area.	Total cost.	Actual outturn of grain.	Value.	Outturn of straw.	Value.	Total value.	Profit.	Profit per bigha.
		B. C. ch.	Rs. A. P.	Md. sr. ch.	Rs. A. P.	Md. sr. ch.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
Block III ..	Dhali *aus* ..	3 4 10	25 13 9	15 26 0	66 7 0	8 0 0	6 0 0	72 7 0	46 9 3	14 0 0
Block II A ..	*Indrasail* ..	1 14 0	12 1 0	11 0 0	45 6 0	12 15 0	9 5 0	55 11 0	43 10 0	26 0 0
Block II C ..	Ditto ..	0 7 0	5 10 3	3 0 0	12 6 0	3 20 0	2 10 0	15 0 0	9 5 9	27 0 0
Block II D ..	Ditto ..	3 3 10	39 8 9	27 0 0	111 6 0	30 0 0	22 8 0	133 14 0	94 5 0	30 0 0
Block II E ..	Ditto ..	3 4 10	38 14 0	26 20 0	109 5 0	28 20 0	21 6 0	130 11 0	91 13 0	29 0 0
	Total ..	8 9 4	96 2 0	67 20 0	278 7 0	74 15 0	55 13 0	335 4 0	239 2 0	....

cli.

Appendix A.

Financial statement of the Comilla Farm for the year 1925-26.

Debits.

Heads of debits.	Amount of each sub-head.	Amount of each head.
	Rs. A. P.	Rs. A. P.
1. Sale-proceeds in hand at the commencement of the year.	Nil	....
2. (*a*) Value of last year's farm produce in stock at the commencement of the year.	440 0 0	....
(*b*) Value of purchased stores and other raw materials of the previous year in stock at the commencement of the year.	46 0 0	486 0 0
3. Amount of outstanding bills payable by the farm at the end of the year.	5 0 0	5 0 0
4. Amount of the unrealised sale-proceeds due to the farm at the commencement of the year.	Nil	....
5. Value of stock, tools, etc., plants and other agricultural implements in hand at the commencement of the year.	1,400 2 0	1,400 2 0
6. Amount drawn from the Treasury—		
(*a*) Pay and allowance of the staff.	156 0 0	
(*b*) Wages of labourers.	1,039 12 6	
(*c*) Contingencies shown under different sub-heads of budgets—		
(*i*) Petty construction and repairs.	247 7 6	2,478 8 9
(*ii*) Purchase and feed of cattle.	500 0 0	
(*iii*) Seeds, manures and implements.	99 11 9	
(*iv*) Reclamation	112 13 6	
(*v*) Miscellaneous	322 11 6	
(*d*) Cost of stores, seeds, farm produce, etc., received from other farms within or outside the province by adjustment on book transfer for feed of cattle for seeds, manures, etc.	150 2 6	150 2 6
		4,519 13 3
Deduct capital expenditure for constructing a road.		209 2 0
		4,310 11 3

Credits.

Heads of credits.	Amount of each sub-head.	Amount of each head.
	Rs. A. P.	Rs. A. P.
1. Sale-proceeds in hand at the end of the year.	Nil	....
2. (*a*) Value of farm produce in stock for sale and farm use at the end of the year.	1,277 13 0	....
(*b*) Value of the purchased stores and other raw materials in stock at the end of the year.	66 0 0	1,343 13 0
3. Amount of the outstanding bills payable by the farm at the commencement of the year.	6 4 0	6 4 0
4. Amount of unrealised sale-proceeds due to the farm at the end of the year.	Nil	Nil
5. Value of stock, tools and plant and other agricultural implements in hand at the end of the year.	1,514 10 0	1,514 10 0
6. Amount paid in the treasury during the year.	....	....
(*a*) Amount credited in cash into the treasury.	1,230 7 0	....
(*b*) Value of stores, seeds, etc., supplied to other farms and seed depots with in or outside thch province by adjustments.	25 8 0	1,255 15 0
		4,120 10 0
Loss ..		190 1 3
		4,310 11 3

APPENDIX XX.

Annual Report of the Mymensingh District Farm for the year 1925-26.

The Mymensingh District Farm was opened in 1920. It is situated near the bank of the old Brahmaputra River, three miles from Mymensingh town, between the Dacca-Mymensingh Road and the Dacca-Mymensingh Railway.

The farm comprises an area of 20 acres, of which 14·0 acres are under cultivation, the rest being occupied by roads, buildings, etc. It has been systematically laid out for experimental work with new crops, manures, implements, etc., and demonstrations of the superiority of departmental seeds, improved methods of tillage and multiplication of pure seeds of recommended varieties for distribution.

Soil.—The soil which is sandy loam on a sandy sub-soil has become impoverished to a great extent. Heavy manuring and a definite cropping scheme with due regard to rotation will be needed to restore fertility. A definite and systematic cropping scheme has been worked out for five years which, it is hoped, is likely to improve the conditions if strictly adhered to.

The analyses of soil and sub-soil from the highland of the farm are given below:—

	Sugarcane soil.	Sub-soil.
Moisture	1·02 ...	0·94
Organic matter, etc.	2·78 ...	2·66
Insol. silicate	81·11 ...	79·72
Potash	1·02 ...	1·20
Lime	1·22 ...	1·20
P_2O_5	·153 ..	0·144
Nitrogen (total)	0·05 ..	0·04

Irrigation and Drainage.—The farm suffers from lack of irrigation facility, which needs early attention for the success of *rabi* crops and highland experiments.

There is a culvert under the railway near the southern end of the farm which, in rainy weather, brings large quantities of water into the farm. A big channel has been constructed during the year under report to carry off the water as fast as it flows from the culvert. This arrangement will, it is hoped, greatly improve the drainage system of the farm and prevent certain portion of farm area from being inundated as hitherto has been the case.

Season.—The season was quite unfavourable for jute, *aus* paddy and sugarcane. Excessive rains in April, May and June drowned all young jute and paddy seedlings, causing serious damage to the crops. The weather was favourable for transplanted paddy. The absence of showers in November and December told badly on *rabi* crops.

The following statement shows the rainfall during the year:—

Month and year.	Normal.	Actual.	Number of rainy days.
January 1925	0·31	0·20	1
February ,, ...	·81	2·95	5
March ,, ...	1·72	3·9	2
April ,, ...	4·55	18·66	13
May ,, ...	11·15	17·97	16
June ,, ...	17·83	24·01	20
July ,, ...	16·70	12·43	15
August ,, ...	17·09	12·15	10
September ,, ...	12·49	21·82	18
October ,, ...	5·68	9·22	9
November ,, ...	0·64	Nil	Nil
December ,, ...	0·10	Nil	Nil
Total ..	89·07	123·32	109
January 1926	0·31	·85	1
February ,, ...	0·81	Nil	Nil
March ,, ...	1·72	..	..

Operations during the year.—During the year under report, 23·75 acres were under cultivation of both *kharif* and *rabi* crops. The table below shows the average outturn of various crops grown on the farm. The outturns of all crops have been greatly affected due to adverse weather conditions and poverty of soil:—

Name of crops.	Area in acres.	Outturns.	outturns per acre.	Remarks.
		Md. sr. ch.	Md. sr. ch.	
Local *aus* (*Chakulia*)	0·7	7 36 0	11 11 7	
Kataktara aus	1·0	8 34 8	8 34 8	
Local Jute (*Dhaleswar*)	0·2	1 10 0	6 10 0	·8 acres of crop totally damaged by heavy rains.
Kakiya Bombai jute	4·25	34 29 0	8 6 13	2 acres totally damaged by heavy rains.
Chinsura green *olitorious* ..	0·6	..	..	Damaged entirely.
Local *aman* paddy (*Biroi*) ..	1·4	15 24 8	12 1 12	
Indrasail aman paddy	3·5	44 31 4	12 31 11	
Deep water *aman* (Local *Kumri*) ..	0·8	18 36 8	23 25 10	
Tanna sugarcane	0·725	..	..	Harvesting is going on.
C. O. 213	0·225	..	..	
Darjeeling potato	0·5	15 39 0	31 38 0	Badly damaged by cut worms.
Tobacco (Manilla and Motihari) ..	0·3	..	..	Damaged by cut worms. The results are not yet to hand as the crop is still to be cured.
Wheat (Pusa No. 52)	·4	..	..	The water condition being unfavourable, the crop did not show any promise of success. Not yet harvested.

An experiment with *aman* paddy (*Indrasail* and *Biroi*) grown after jute and *aus* paddy was conducted on 1·2 acres of land under the guidance of the Economic Botanist, Bengal. The results of the experiment are stated below:—

Aman paddy grown after jute.

Name of crops.	Area in acres.	Outturns.		Outturn per acre.	
		Grain.	Straw.	Grain.	Straw.
		Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.
Biroi aman (local)	·05	0 30 0	1 12 0	15 0 0	26 0 0
Indrasail	·05	0 35 0	1 16 0	17 20 0	28 0 0
Biroi aman (local)	·05	0 34 0	1 13 0	17 0 0	26 20 0
Indrasail	·05	1 0 0	1 20 0	20 0 0	30 0 0
	·02				
Indrasail	·05	0 28 8	1 1 8	14 10 0	20 30 0
Biroi aman (local)	·05	0 22 0	0 39 0	11 0 0	19 20 0
Indrasail	0·05	0 30 4	1 2 0	15 5 0	41 0 0
Biroi aman (local)	0·05	0 30 0	1 10 0	15 0 0	25 0 0
	0·2				
Indrasail	0·05	0 30 8	1 13 0	15 10 0	26 20 0
Biroi aman (local)	0·05	0 22 0	1 10 0	11 0 0	25 0 0
Indrasail	·05	0 20 4	1 1 0	10 5 0	20 20 0
Biroi aman (local)	·05	0 32 8	1 15 0	16 10 0	27 20 0
	·2				

Aman paddy grown after aus.

Name of crops.	Area in acres.	Outturns.		Outturn per acre.	
		Grain.	Straw.	Grain.	Straw.
		Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.
Indrasail	·05	0 15 0	0 22 0	11 0 0	19 20 0
Biroi aman (local)	·05	0 19 0	0 27 0	9 20 0	13 20 0
Indrasail	·5	0 21 8	1 0 0	10 30 0	20 0 0
Biroi aman (local)	·05	0 17 8	0 30 0	8 30 0	15 0 0
	·2				
Indrasail	·05	0 39 0	1 13 0	19 20 0	26 20 0
Biroi aman (local)	·05	0 30 8	1 3 0	15 10 0	21 20 0
Indrasail	·05	0 38 8	1 16 0	19 10 0	28 0 0
Biroi aman (local) .	05	1 1 8	1 21 0	20 30 0	30 20 0
	·2				
Biroi aman (local)	·5	0 5 0	0 10 0	2 20 0	5 0 0
Indrasail	·05	0 7 0	0 12 0	3 20 0	6 0 0
Biroi aman (local)	·05	0 7 8	0 13 0	3 30 0	6 20 0
Indrasail	·05	0 9 8	0 15 0	0 4 0	0 7 20
	·2				

As the results of the one year are not definite, the experiment will be continued.

Tori.—Four types of second Economic Botanist's tori were tried on ·4 acres for multiplication of seeds, but failed due to patchiness of land and adverse weather conditions.

Khesari.—Khesari was broadcasted on three acres over paddy fields and the crop utilised as fodder for the farm cattle.

Matikalai.—*Matikalai* was grown on 1·7 acres. The crop was a partial failure owing to unfavourable weather conditions.

Fodder crops.—*Juar* and *Matikalai* were grown on ·22 and 1·2 acres respectively, and the crops were used for feeding the farm cattle.

Sunn hemp.—An area of 1·45 acres of land were cropped with sunn for green manuring, and the crop ploughed in and incorporated in the soil to improve fertility.

Cultivation on economic basis.—The following statement shows details of outturns and returns with costs of the crop grown on business lines during the year 1925-26. It shows a profit of Rs. 170-15 on 4·3 acres of crop:—

Variety of crops.	Area in acres.	Total cost of cultivation.	Yield.	Total value.	Profit.
		Rs. A. P.	Md. sr. ch.	Rs. A. P.	Rs. A. P.
Kataktara	·7	9 13 10	4 30 8	21 7 9	11 9 11
Chakulia aus	·7	10 10 11	7 36 0	35 8 9	24 13 10
K. B. jute	·7	61 1 8	6 13 8	127 13 6	66 11 10
Deshi jute	·2	6 8 7	1 10 0	25 3 9	18 11 2
Indrasail	1·0	26 4 5	12 25 4	56 13 6	30 9 1
Biroi aman (local)	1·0	27 13 1	10 11 8	46 4 3	18 7 2
	4·3				170 15 0

Cattle.—There are seven bullocks on the farm, of which one is too old for service. The general health of the rest of the bullocks is good.

Receipts and expenditure.—Detailed statement showing the receipts and expenditure of the farm during the year under report will be found in Appendix A.

Management.—Babu Profulla Kumar Das held charge of the farm till the beginning of September, when he was transferred to Northern Circle, and Mr. Kshitish Ch. Guha was in charge for the rest of the year. Mr. Guha is a qualified officer. It is hoped that he will do his level best to raise this farm to a better condition.

Visits and inspection.—The farm was visited by the Director of Agriculture, Bengal, the Assistant Director of Agriculture, the Agricultural Chemist.

The Deputy Director of Agriculture, Eastern Circle, inspected the farm very frequently during the year.

J. N. SIRKAR,

Deputy Director of Agriculture,
Eastern Circle (Offg.).

Financial return showing the result of agriculture in Mymensingh Farm for the year ending 31st March 1926.

Debits.

Heads of debits.	Rs. A. P.	Rs. A. P.
1. Sale-proceeds in hand at the commencement of the year	Nil	Nil
2. (*a*) Value of last year's farm produce in stock at the commencement of the year for farm use ..	252 15 0	252 15 0
(*b*) Value of purchased stock and other raw materials of the previous year in store at the commencement of the year	131 12 6	131 12 6
3. Amount of the outstanding bills payable by the farm at the end of the year	Nil	Nil
4. Amount of unrealised sale-proceeds due to the farm at the commencement of the year ..	42 0 3	42 0 3
5. Value of tools and plants and other Agricultural implements in hand at the commencement of the year	1,364 14 0	1,364 14 0
6. Amount drawn from the treasury during the year—		
(*a*) Pay and allowance of staff	2,028 8 0	
(*b*) Contingencies to be under different sub-head of budget :—		
(1) Wages of labourers	1,096 5 6	
(2) Purchase and feed of cattle ..	52 14 6	
(3) Seeds and manures	238 15 6	
(4) Miscellaneous	249 10 3	
(5) Petty construction and repairs ..	477 10 0	
(6) Cost of stores, seeds, farm produce received from other farms within or outside the Province by adjustment or book transfer ..	206 11 0	4,350 10 9
		6,142 4 6
Deduct on account of capital expenditure—Petty construction		477 10 0
		5,664 10 6

Credits.

Heads of credits.	Rs. A. P.	Rs. A. P.
1. Sale-proceeds in hand at the end of the year ..	Nil	Nil
2. (*a*) Value of farm produce in stock for sale and farm use	720 14 9	720 14 9
(*b*) Value of purchased store and other raw material in stock at the end of the year ..	61 2 9	61 2 9
3. Amount of outstanding bills payable by the farm at the commencement of the year ..	23 0 0	23 0 0
4. Amount of unrealised sale-proceeds due to the farm at the end of the year	Nil	Nil
5. Value of tools and plant and other agricultural implements in hand at the end of the year ..	1,542 11 0	1,542 11 0
6. Amount paid in the treasury during the year—		
(*a*) Amount credited in cash into treasury. ..	1,043 15 0	1,043 15 0
(*b*) Value of store, seed, etc., supplied to other farm seed depot within or outside the province by adjustment	Nil	Nil
		3,391 11 6
Excess of expenditure over the receipts, *i.e.*, loss		2,272 15 0
		5,664 10 6

civil.

APPENDIX XXI.

Annual Report of the Barisal Farm for the year 1925-26.

Short History.—The farm is situated two miles south of the town of Barisal It represents the typical paddy fields of the district. It is inundated by high tidal water in the rainy season and gets a fair deposit of silt. The area is 20 acres, *i.e.*, 60 bighas and 10 cottahs and about 47 ½ bighas of land are available for cultivation. Of these, 41½ bighas are low paddy lands, 3½ bighas medium lands and 2½ bighas high land. The remaining 13 bighas 10 cottahs are occupied by a tank, office, quarters, road and drains, etc. The high lands are raised from the tank earth.

The soil contains very high proportion of potash (K20), plenty of lime (ca°) and sufficient phosphates.

Season.—The following table gives the rainfall and number of rainy days in 1925, as compared with the normal:—

Month and year.	Actual rainfall in inches.	Number of rainy days.	Normal. rainfall in inches.
January 1925 ..	2·12	4	·48
February „ ..	·32	2	1·10
March „ ..	·80	2	2·41
April „ ..	3·23	8	3·95
May „ ..	7·19	10	8·66
June „ ..	13·31	16	16·59
July „ ..	19·87	25	15·95
August „ ..	7·36	19	13·23
September „ ..	5·68	11	11·16
October „ ..	9·71	11	5·64
November „ ..	1·60	1	1·35
December „ ..	·10	1	·34
	71·29	110	80·87
January 1926 ..	·78	3	·48
February „ ..	Nil	Nil	1·10
March up to 11th ..	3·54	5	2·42

The season was rather good for *aus* paddy and jute, but not so for *aman* paddy as rains from June to November, *i.e.*, during the growing period of *aman* paddy was 20·99 less than the normal. The rain was rather high in June, but in August and September it was much below the normal. The rain in October however improved the condition much. The *rabi* crops have been affected by heavy shower in March.

The total area under cultivation was as follows:—

Kharif crops	16·13	acres.
Rabi crops	1·09	„
	17·22	„
Deducting the double cropped area ..	1·46	„
	15·76	acres net cropped.
Kharif crops area	16·13	acres.
Aman paddy	12·70	„
Sugarcane	·33	„
Jute	·81	„
Aus paddy	·51	„
Japanese millet	·03	„
Pine apple	·04	„
E. B.'s *balam* paddy seed bed	·11	„
E. B.'s *balam* paddy experiment	1·60	„
	16·13	„

Of this, the area under—

Economic basis was	.. .. ..	12·70 acres.
Experts experiment	.. .. ..	2·04 „
General experiment	.. .. ..	1·39 „
		16·13 „

Economic area.—*Aman paddy.*—Three varieties of *balam* paddy were grown in 12·70 acres. This whole area was cultivated under economic basis. Owing to unfavourable rainfall in August and September, *i.e.*, just after transplanting, the crop could not thrive well, consequently there is a fall in the outturn, though the rainfall in October did appreciable good to the crop. The results as obtained are given below:—

Name of paddy.	Area in bighas.	Actual outturn.	Average outturn per bigha.	Average outturn.
1925-26.	Bs. cs. chs.	Mds. srs. chs.	Mds. srs. chs.	Mds. srs. chs.
Khiraijali	13 17 12	104 29 5	7 21 15½	22 15 14½
Basful	11 15 5	86 7 1	7 13 0	21 39 0
Chingribhusi	12 11 0	104 36 11	8 14 6	25 3 2
	38 4 1	295 33 1		

Net area		12·70 acres.
Net expenditure	Rs.	527
Net receipts	„	1,497
Net profit	Rs.	970
Profit per acre	„	76

Sugarcane.—The Agricultural Chemist, Government of Bengal, tried on this farm three different varieties of sugarcane.

The following varieties were tried on ·33 acres of medium land. The results are given below:—

Name.	Area.	Weight of cane.	Weight of juice.	Weight of *gur*.
		Mds. srs. chs.	Mds. srs. chs.	Mds. srs. chs.
Yellow *tanna*	·13	80 35 11	53 1 14	8 14 0
C. O. 213	·16	86 21 5	55 34 2	9 19 8
C. O. 205	·04	11 25 0	6 31 5	1 2 4
	·33			

	Weight of *gur* per acre.	Percentage of juice to cane.	Percentage of *gur* to juice.
	Mds. srs. chs.		
Yellow *tanna** ..	64 9 4	65·57	15·74
C. O. 213	59 11 14	64·55	16·09
C. O. 205	26 16 4	58·34	15·54

* The *gur* of *tanna* gives a brackish taste than other varieties.

The sugarcane was not very uniform owing to damages done by insects. Three thousand and four hundred sugarcane setts have been sold outside, besides keeping the farm requirements.

Jute.—R. 85 jute was tried on ·81 acres of high raised land. The results of the different plots with different treatments are given below:—

Plot No.	Area.	Manure rate per acre.	Actual yield.	Yield per acre.
			Mds. srs. chs.	Mds. srs. chs.
49	·28	Cowdung 200 mds.	7 5 0	25 17 13
50	·07	50 mds. cowdung, castor-cake 5 mds., sodium nitrate 1 md.	1 15 0	19 25 11
54	·15	150 mds. cowdung, 5 mds. castor-cake, 2 mds. sodium nitrate.	4 10 0	28 13 5
53	·31	150 mds. cowdung, 1½ mds. sodium nitrate.	5 8 0	13 39 2
	·81			

Aus paddy.—*Kataktara aus* paddy was grown on ·51 acres of high raised land and medium land. The results are shown below:—

Plot No.	Land.	Area.	Manure.	Actual yield.	Yield per acre.
				Mds. srs. chs.	Mds. srs. chs.
47/48†	Medium ..	·37	150 mds. cowdung per acre	10 35 0	29 15 10
52	High land (rais d).	·10	150 mds. cowdung per acre	2 25 0	26 10 0
54(i)	Ditto ..	·04	125 mds. cowdung per acre	0 32 0	20 0 0

† This plot got silt from the flood water.

Japanese millet.—This failed owing to excessive heavy showers after the sowing.

Pine apple.—Queen variety from Kalimpong was grown. The crop is not thriving well. Eighty shoots have been supplied outside from the farm crop.

E. B.'s balam paddy experiments.—About 1·60 acres of land was under E. B.'s paddy experiment. *Chingribhusi*, *Basful* and *Khirai-jali* of the *balam* paddy varieties were tried under E. B.'s direct control to get a selected strain of the varieties.

Area under rabi crops (1·09 acres).—The following crops were tried:—

		Acres.
1.	*Masuri*	·69
2.	Vegetables	·15
3.	Tobacco	·25
		1·09

Musuri was tried after jute and *aus* paddy in three plots. The crop has been harvested.

Vegetables.—Tomato and cabbages are grown in ·15 acres of land. The tomato has grown fairly well.

Tobacco.—Three varieties of tobacco—*Motihari*, Manila and *Bhengi*—were grown under the direction of the Agricultural Chemist, Bengal, for experiment. The crop is still on the land, and has been badly affected by unusual rainfalls in the month of March.

Plantain.—A few plantain shoots of Munshiganj variety were grown on the bank of the tank and on the raised boundary lines. About 100 shoots have been sold to outsiders from the farm crop.

Cocoa-nut.—A few plants of cocoa-nut are also grown on the boundary lines of the farm.

Fishery.—Six thousand fries were put from the fishery department in the year 1923-24. No sale has yet been made.

Receipts and expenditure.—Detiled statement showing the receipts and expenditure of the farm during the year under report will be found in Appendix A.

Visit and inspection.—His Excellency the Governor of Bengal visited the farm in July last. The Fibre Expert, Agricultural Chemist and Economic Botanist visited the farm several times in connection with experiments. The Assistant Director of Agriculture, Bengal, paid visits to the farm, and it was visited frequently by the Deputy Director of Agriculture, Eastern Circle. Several private persons also visited the farm.

Staff.—Babu Surendra Nath Sen was in charge of the farm for five and a half months, and Babus Gamoz Behari Bose and Atul Chandra Bose acted in his place during his absence on leave for the remaining period of the year.

J. N. SIRCAR,

Deputy Director of Agriculture,
Eastern Circle (Offg.).

Appendix A.

Financial statement of the Barisal Farm for the year 1925-26.

Debits.

Heads of debits.	Amount of each sub head.	Amount of each head.
	Rs. A. P.	Rs. A. P.
1. Sale-proceeds in hand at the commencement of the year, i.e., on 1st April 1925.	Nil	Nil.
2. (*a*) Value of last year's farm produce in stock at the commencement of the year.	238 15 6	....
(*b*) Value of purchased stores and other raw materials of the previous year in stock at the commencement of the year.	49 0 0	287 15 6
3. Amount of outstanding bills payable by the farm at the end of the year.	Nil	Nil
4. Amount of the unrealised sale-proceeds due to the farm at the commencement of the year.	10 4 6	10 4 6
5. Value of tools and plants and other agricultural implements in hand at the commencement of the year, including live-stock.	2,072 0 0	2,072 0 0
6. Amount drawn from the treasury during the year—		
(*a*) Pay and allowance of staff.	156 0 0	....
(*b*) Supplies and services—		
(1) Purchase and feed of cattle.	256 14 6	....
(2) Purchase of seeds, manures, etc.	57 13 9	....
(*c*) Contingencies—		
(1) Office expenses and miscellaneous.	250 0 0	....
(2) Wages of labourers.	1,186 7 3	....
(3) Reclamation	240 0 0	....
(4) Petty construction and repairs.	167 0 0	....
(*d*) Cost of stores, seeds, farm produce, etc., received from other farms within or outside the province by adjustment or book transfer.	37 7 0	....
	2,351 10 0	
Deduct on account of capital expenditure—		
(1) Petty construction and repairs.	167 0 0	....
(2) Reclamation for excavating a steeping tank.	240 0 0	1,944 10 6
	407 0 0	4,314 14 6
Net excess of over expenditure, i.e., profits.	....	95 3 0
		4,410 1 6

Credits.

Heads of credits.	Amount of each sub-head.	Amount of each head.
	Rs. A. P.	Rs. A. P.
1. Sale-proceeds in hand at the end of the year.	Nil	Nil
2. (*a*) Value of farm produce in stock for sale and farm use.	755 13 9	....
(*b*) Value of the purchased stores and other materials in stock at the end of the year.	23 15 0	782 12 9
3. Amount of outstanding bills payable by the farm at the commencement of the year.	30 7 0	30 7 0
4. Amount of unrealised sale-proceeds due to the farm at the end of the year.	Nil	Nil
5. Value of tools and plants and other agricultural implements in hand at the end of the year.	1,898 0 0	1,898 0 0
6. Amount paid in the treasury during the year—		
(*a*) Amount credited in cash into the treasury.	1,698 13 9	1,698 13 9
(*b*) Value of stores, seeds, etc., supplied to other farm seed depots within or outside the province by adjustment.	Nil	Nil
		4,410 1 6

APPENDIX XXII.

Annual Report of the Faridpur Farm for the year 1925-26.

Situation.—This farm is situated at a village called Bamankanda, about 3 miles from the Faridpur town, and there is a *pucca* road from the town to the farm The farm is situated above the flood level.

Area.—The area of the farm is 20:48 acres, and it has been properly laid out in regular plots in the year under report. The farm is divided into four blocks. Each block has generally been subdivided into one-fifth acre plots. The actual area under cultivation is about 15 acres. The rest of the land is being occupied by buildings, roads, tanks, etc.

Soil.—The analysis of the soil of the farm has not yet been made by the Agricultural Chemist. The soil however represents the soil of the high land of the district and is of loamy nature.

Season.—The following is the table showing the rainfall of the farm :—

Month and year.	Actual rainfall in inches.	Normal rainfall.	Number of rainy days.
April 1925 ..	5·33	4·48	10
May ,, ...	7·21	8·88	17
June ,, ...	12·44	13·12	16
July ,, ...	9·54	12·70	28
August ,, ...	4·03	12·17	20
September ,, ...	9·61	9·24	12
October ,, ...	4·63	4·50	6
November ,, ...	0·11	0·99	1
December ,, ...	..	0·15	..
January 1926 ..	0·60	0·45	1
February ,, ...	..	1·32	..
March ,, ...	2·84	2·36	5
	56·34	70·36	116

Cultivation.—The following crops were grown on area noted against each :—

Name of crop.	Area. Bs. cs. chs.
K. B. jute	2 17 0
G. O. jute	7 7 0
Kataktara aus paddy	5 2 0
Parangi (local *aus*)	3 3 0
Dhepi paddy	0 15 0
Dudsar paddy	0 18 0
Sugarcane, ...	1 1 0
Vegetables	0 9 0
Jhingasail (local broadcast *aman*)	3 12 0
Indrasail paddy (transplanted)	11 17 0
Masur	2 11 0
Gram	1 16 0
Peas	1 7 0
Mustard	1 16 0
Potato	0 11 0
Radish	0 5 0
Wheat	1 16 0
Cotton (experimental)	0 3 0
Tobacco (experimental)	0 6 0
Total ..	47 12 0

Outturn of crops.—The following outturn was obtained from each of the above crops. It may be noted that no manure or irrigation was given to any crop. Besides the surface-soil was taken away for levelling the plots, thus impairing the fertility of the soil to a great extent. At least three years' cultivation is necessary to bring the land to its usual fertility. It should also be noted that the Sann grass, *kachus*, *sati*, *etc.*, used to be grown on the land of this farm for a long time, and it has been a difficult problem to get rid of these weeds. The land was never under the plough before.

Taking all these into account, it may be said the outturn has generally been fair:—

Name of crop.	Area sown.	Total outturn.	Outturn per *bigha*.
	Bs. cs. chs.	Mds. srs. chs.	Mds. srs. chs.
K. B. jute	2 17 0	13 0 12	4 22 8
G. O. jute	7 7 0	43 21 2	5 37 0
Kataktara aus	5 2 0	18 11 0	3 23 2
Parangi (local *aus*)	3 3 0	17 7 0	5 18 2
Dhepi paddy	0 15 0	0 32 12	2 5 0
Dudsar paddy	0 18 0	1 11 0	1 16 10
Sugarcane (*gur*)	1 1 0	25 1 0	24 2 9
Vegetables	0 9 0	Value of Rs. 36-5-9.	
Jhingasail (local broadcast *aman*)	3 12 0	22 15 0	6 7 12
Indrasail	11 17 0	46 33 0	3 38 2
Masur	2 11 0	7 0 0	2 29 10
Gram	1 16 0	3 15 0	1 35 0
Peas	1 7 0	2 30 0	2 18 0
Mustard	1 16 0	3 2 8	1 29 6
Potato	0 11 0	5 10 0	9 9 4
Radish	0 5 0	Value of Rs. 10-2-6.	
Wheat	1 16 0	5 10 0	2 36 10
Cotton (not yet harvested)	....	....	....
Tobacco (the curing is not yet finished) ..	....	....	....

	Rs. A. P.
Actual cost for cultivation	1,656 2 0
Amount credited to the treasury	1,444 5 6
Value of procedure in stock	878 14 0
Profit	667 1 6

Labour.—It should be noted here that labour is very dear in this district and is not easily available. It has not been possible in absence of a cooly shed on the farm to accommodate outside labour, *e.g.*, *Santhals* which may be cheaper. If Santhals or any class of cooly be recruited from outside and accommodated on the farm, the cost of cultivation is expected to be greatly reduced.

Agricultural education.—With the approval of the Director of Agriculture, Bengal, practical training has been started on the farm. Three *bhadrolog* young men with University education have been taken as daily labourers, and are working seven hours a day to earn their daily wages. They are being given work in such a manner as will enable them to learn all about a crop from the beginning to the end. They are working satisfactorily. Theoretical instructions are also being given occasionally.

Bull.—A pedigree Sindhi bull has been kept on the Farm for free service. It is hoped that it will go a great way in improving the local breed in the neighbourhood of the farm. The bull is already in very great demand.

Receipts and expenditure.—Detailed statement showing the receipts and expenditure will be found in Appendix A.

Visits.—The farm was visited during the year by Mr. Gandhi, Sir P. C. Roy, Mr. S. G. Hart, I.C.S., Mr. A. T. Weston, Officiating Director of Industries, Mr. D. H. Wares, I.C.S., Mr. N. G. Edgely, I.C.S., District Judge, Mr. L. B Burrows (present Collector), Mr. G. D. Tyson (Additional Judge), Mr. E. Moore, Special Officer, Water Hyacinth.

Besides it the farm was frequently visited by several president panchayets and other non-officials interested in agriculture, and a large number of cultivators. The Deputy Director of Agriculture, Eastern Circle, visited the farm nine times during the year. The Assistant Director gave three visits to the farm during the year.

Management.—Babu Debendra Nath Mitra, District Agricultural Officer, was in charge of the farm; he was helped by two demonstrators who worked satisfactorily. I am glad to mention here that in recognition of good service of Debendra Babu, the title of Rai Sahib has been conferred upon him by the Government during the year.

J. N. SIRKAR,

Deputy Director of Agriculture,
Eastern Circle (Offg.)

Appendix A.

Financial statement of the Faridpur farm for the year 1925-26.

Heads of debits.	Amount of each sub-head.	Amount of each head.
	Rs. A. P.	Rs. A. P.
1. Sale proceeds in hand at the commencement of the year, *viz.*, 1st April 1925	....	....
2. (*a*) Value of last year's farm produce in stock at the commencement of the year ..	40 0 0	....
(*b*) Value of purchased stores and other raw materials of the previous year in stock at the commencement of the year ..	158 0 0	198 0 0
3. Amount of the outstanding bills payable by the farm at the end of the year	....	....
4. Amount of unrealised sale proceeds due to the farm at the commencement of the year ..	....	....
5. Value of the tools and plants and other agricultural implements including live-stock at the commencement of the year. ..	1,119 0 0	1,119 0 0
6. Amount drawn from the treasury during the year—		
(*a*) Pay and allowance ..	2,576 0 0	....
(*b*) Wages of labourers ..	2,099 9 0	....
(*c*) Office expenses and miscellaneous ..	349 3 0	....
(*d*) Reclamation	896 4 0	....
(*e*) Purchase and feed of cattle	355 0 9	....
(*f*) Purchase of seeds, manure, etc. ..	292 15 0	....
(*g*) Petty construction and repairs ..	843 8 0	....
(*h*) Rents, rates and taxes ..	16 0 0	....
(*i*) Cost of stores and seeds—farm produce received from other farms within or outside the province by adjustment or book transfer	125 5 6	7,553 13 3
		8,870 13 3
Deduct on account of capital expenditure—Petty construction and repairs ..	....	843 8 0
Total ..	....	8,027 5 3

Heads of credits.	Amount of each sub-head.	Amount of each head.
	Rs. A. P.	Rs. A. P.
1. Sale proceeds in hand at the end of the year ..	....	....
2. (*a*) Value of farm produce in stock for sale and farm use at the end of the year ..	787 11 0	....
(*b*) Value of the purchased stores and other raw materials in stock at the end of the year ..	224 14 0	1,012 0 0
3. Amount of outstanding bills payable by the farm at the commencement of the year ..	....	....
4. Amount of unrealised sale proceeds due to the farm at the end of the year	....	....
5. Value of tools and plants and other agricultural implements in hand at the end of the year, including live-stock	1,434 0 0	1,434 0 0
6. Amount paid into the treasury—		
(*a*) Amount credited in cash	1,449 8 0	....
(*b*) Value of seed store supplied and other farm seed department within or outside the province ..	....	1,449 8 0
		3,896 1 0
Excess of expenditure over receipts or loss	....	4,131 4 3
Total ..	....	8,027 5 3

APPENDIX XXIII.

Annual Report of the Kishoreganj Farm for the year 1925-26.

History and area.—The farm is a piece of land of 83 acres close to the town of Kishoreganj. This land was acquired by Government for the proposed new district headquarters, in connection with the scheme for partition of the Mymensingh district, which is now in abeyance.

The farm as in previous years was running on crop sharing basis under the supervision of the District Agricultural Officer.

The results of the farm with regard to experiment and demonstration are on the whole very satisfactory. The cost of cultivation and other expenditure are nominal. It is practically a profitable concern.

Soil.—The soil is a rich sandy loam, and it is representative for all departmental crops.

Seasons.—The following table gives the rainfall and number of rainy days in 1925 as compared with normal:—

Month and year.	Number of rainy days.	Actual rainfall.	Normal rainfall.
January 1925	1	0·38	0·57
February „	5	1·44	0·88
March „	3	2·52	2·27
April „	13	16·42	6·15
May „	19	12·84	12·26
June „	23	13·33	18·32
July „	24	29·07	14·23
August „	14	8·97	14·89
September „	22	15·40	12·64
October „	12	4·95	5·37
November „	Nil	..	0·77
December „	Nil	..	0·21

The season was unfavourable on account of excessive rains for jute, *aus* paddy and sugarcane, but favourable for winter transplanted paddy, while *rabi* crops, such as *mung*, mustard and potato were also much affected due to rains in October.

Crops.—During the year under report, the following crops were raised and outturn obtained:—

Crop.	Area in *bigha*.	Total outturn.	Yield per acre.	Government share.	Remarks.
		Mds. srs.	Mds. srs.	Mds. srs.	
K. B. jute ..	50	168 25	10 0	84 12½	The crop was considerably damaged by excessive rains.
Kataktara aus paddy	24	108 0	13 0	54 20	Ditto.
Local *aus* paddy, *viz.*, *Katchilian* and *Bodlia*.	8	31 0	9½ 0	15 20	Ditto.
Indrasail paddy ..	28	216 15	23 0	108 7½	
Local paddy, *viz.*, *Nolooch*, *Mangiri* and *Dudsar*.	25	142 0	16¾ 0	71 0	

Crop.	Area in *bigha*.	Total outturn.	Yield per acre.	Government share.	Remarks.
		Mds. srs.	Mds. srs.	Mds. srs.	
Mustard ..	3	6 0	6 0	3 0	Crop was damaged by insect pest cut worm that broke out in part of this district, and about four annas crop was only obtained this year.
Mung	6	12 0	6 0	6 0	Damaged by excessive rains in October.
Potato	2	34 0	51 0	22 26	Damaged by cut worms.
Ratooned sugarcane	12	49 0	17 0	16 16	Crop was very poor due to excessive rains. Totally destroyed.
Plant cane ..	3	16 29	16 29	5 23	The crop was poor due to water-logging. Totally destroyed.
Ditto ..					

The above table shows that 82 bighas were double cropped. It may be noted that double crops are being raised for the last four years without application of any manure.

The experiment of R/85, D. 154 Fanduk and local jute was conducted at the instance of the Fibre Expert, Bengal, but the experiment failed due to the excessive rains. The plants were submerged in seedling stage and water-logging could not be recovered.

The experiment with mustard and *sarsoon* was conducted, but no definite result was arrived at on account of the crop being infested by cut worms that broke out throughout the eastern part of the district.

Sumatra, *Bhengi* and *Motihari* tobaccos were tried, and the crops did well.

Receipts and expenditure.—Detailed statement showing the receipts and expenditure will be found in Appendix A.

Management.—Babu Amrita Lal Shome, the District Agricultural Officer of Kishoreganj Circle, was in charge of this farm. The season was very unfavourable this year. But Amrita Babu managed the work quite energetically. He is an officer of very active habit. The farm was visited by the Deputy Director of Agriculture very frequently.

Visits.—Besides the Deputy Director of Agriculture and other officers of the department, the farm was visited by the Commissioner of the Dacca Division, the Collector of the district. Our thanks are due to Messrs. Twynum and Blair, District Magistrate, Mymensingh, for the help rendered by them.

J. N. SIRKAR,

Deputy Director of Agriculture,
Eastern Circle (Offg.).

Appendix A.

Financial return showing the results of agriculture in Kishoreganj Farm for the year ending 31st March 1925-26.

Debits.

Heads of debits.	Amount of each sub-head.	Amount of each head.
	Rs. A. P.	Rs. A. P.
1. Sale-proceeds in hand at the commencement of the year, *viz.*, 1st April 1925.	Nil	Nil
2. (*a*) Value of last year's farm produce in stock at the commencement of the year.	708 1 0	
(*b*) Value of purchased stores and other raw materials of the previous year in stock at the commencement of the year.	74 14 0	782 15 0
3. Amount of outstanding bills payable by the farm at the end of the year.	Nil	....
4. Amount of unrealised sale-proceeds due to the farm at the commencement of the year.	Nil	....
5. Value of tools and plants and other agricultural implements in hand at the commencement of the year.	Nil	....
6. Amount drawn from the treasury during the year—		
(*a*) Pay and allowance of the staff.	52 0 0	52 0 0
(*b*) Wages of labourers.	154 12 0	
(*c*) Contingencies—		
(1) Purchase and feed of cattle.	Nil	
(2) Purchase of seeds, manures, and implements	335 10 3	
(3) Office expenses and miscellaneous.	90 6 6	
Petty construction and repairs	1,086 12 0	
Rent and rates.	2 11 0	1,670 3 9
(*d*) Cost of stores, seeds, farm produce that are received from other farms within or outside the province by adjustment or B.T.C. Dacca Farm.	64 12 0	64 12 0
		2,569 14 9
Deduct capital expenditure.	....	1,086 12 0
		1,483 2 9
Net profit ..	....	1,844 15 6
		3,328 2 3

Credits.

Heads of credits.	Amount of each sub-head.	Amount of each head.
	Rs. A. P.	Rs. A. P.
1. Sale-proceeds in hand at the end of the year	Nil	....
2. (*a*) Value of farm produce in stock for sale and farm use.	511 0 6	....
(*b*) Value of purchased stores and other raw materials in stock at the end of the year.	33 4 0	544 4 6
3. Amount of outstanding bills payable by the farm at the commencement of the year.	Nil	....
4. Amount of unrealised sale-proceeds due to the farm at the end of the year.	Nil	....
5. Value of tools and plants and other agricultural implements in hand at the end of the year.	15 0 0	15 0 0
6. Amount paid in the treasury during the year—		
(*a*) Amount credited in cash into the treasury.	2,746 5 9	....
(*b*) Value of stores, seed, etc., supplied to other farm seed depots within or outside the province by adjustment.	22 8 0	2,768 13 9
	3,328 2 3	3,328 2 3

Clayton Experiment, 1925-26.

The following experiment was conducted under instruction of Mr. Clayton, Commissioner, Dacca Division : ". . . when it is proposed to grow *aus* and *aman* paddy in succession experiment should be made with a ripening *aus* against the later varieties in order to see whether the outturn of *aman* is much effected in an ordinary year in consequence of the later harvesting of the *aus* crop . . ."—Sd. A. H. CLAYTON, *Offg. Commissioner*, 20-9-25.

Area in bighas.	Paddy.	Variety.	Early or late.	Date of sowing.	Date of flowering.	Date of harvesting.	Outturn of plot.	Average outturn per acre.	Remarks.
							Md. sr. ch.	Md. sr. ch.	
½	*Aus* paddy	*Boalia* ..	Early ..	31-3-25	Second week of June	3-7-25	3 10 0	19 20 0	*Boalia* does not seem to be suited in some type of land as *Kataktara*.
½	Ditto	*Kataktara*	Late ..	31-3-25	Third week of June	21-7-25	2 30 0	16 20 0	*Kataktara* was partially damaged by excessive rains. *Boalia* is suited in a very low area, but not exactly like deep water *aus* paddy, *i.e.*, *Kataktara* is not suited to this type of land where experiment is conducted. The experiment will be repeated next year.

Clayton Experiment, 1925-26.

[*Aus* followed by *aman.*]

Name of previous crop.	Area.	Name of present crop.	Date of transplanting.	Date of flowering.	Date of harvesting.	Outturn per plot.	Average outturn per acre.
	B. K. C.					Md. sr. ch.	Md. sr. ch.
Boalia ..	0 5 0	*Indrasail* versus	10-7-25	Last week of October.	4-12-25	2 0 0	24 0 0
	0 5 0	*Nalooch** ..	10-7-25	Ditto ..	4-12-25	1 30 0	21 0 0
Kataktara ..	0 5 0	*Nalooch* versus	10-8-25	Ditto ..	8-12-25	1 25 0	19 20 0
	0 5 0	*Indrasail* ..	10-8-25	Ditto ..	8-12-25	1 30 0	21 0 0

The experiment will be repeated this year.
* *Nalooch* cannot compete with *Indrasail* paddy.

Dr. Hector's Experiment, 1925-26.

Name of crop.	Area.	Date of transplanting.	Date of flowering.	Date of harvesting.	Outturn per plot.	Average outturn per acre.
					Md. sr. ch.	Md. sr. ch.
Indrasail paddy ..	1/40 acre	Second week of July.	Last week of October.	Last week of November to first week of December.	0 25 0	25 0 0
Barootti ,, ..	1/40 ,, ..	Ditto ..	Ditto ..	Ditto ..	0 20 0	20 0 0
Nalooch ,, ..	1/40 ,, ..	Ditto ..	Ditto ..	Ditto ..	0 16 0	16 0 0
Indrasail ,, ..	1/40 ,, ..	Ditto ..	Ditto ..	Ditto ..	0 30 0	30 0 0
Barootti ,, ..	1/40 ,, ..	Ditto ..	Ditto ..	Ditto ..	0 18 0	18 0 0
Nalooch ,, ..	1/40 ,, ..	Ditto ..	Ditto ..	Ditto ..	0 20 0	20 0 0
Indrasail ,, ..	1/40 ,, ..	Ditto ..	Ditto ..	Ditto ..	0 30 0	30 0 0
Barootti ,, ..	1/40 ,, ..	Ditto ..	Ditto ..	Ditto ..	0 20 0	20 0 0
Nalooch ,, ..	1/40 ,, ..	Ditto ..	Ditto ..	Ditto ..	0 20 0	20 0 0

NOTE.—Local varieties cannot compete with *Indrasail* paddy.

APPENDIX XXIV.

Annual Report of the Dhanbari Farm for the year 1925-26.

History.—The farm is situated at Dhanbari in the Tangail subdivision of Mymensingh district, and is about 12 miles off from the Baushi Railway Station. The farm comprises 17 bighas of high land in one block and 4 bighas of low land in another acquired for the proposed subdivisional town at Dhanbari.

A demonstrator is stationed at Dhanbari, and our recommended crops are being grown there under *borga*.

The soil is poor light sandy loam, and is suitable for jute and paddy. Major portion of this land being high, only one crop can be grown in *kharif*.

In the year under report, the following crops were grown, but owing to continuous rains in the early stage, the crops could not thrive well, and hence the result was not satisfactory:—

Crops.	Area sown.	Total outturn.	Outturn per bigha.	Government share.
	B. K.	Md. sr.	Md. sr.	Md. sr. ch.
Kataktara	5 10	4 11	0 31	2 5 8
K. B. jute	2 12	6 5	2 9	....
G. O. jute	3 5	7 0	2 6	3 20 0

In *rabi* season sunn hemp for green manuring was grown on 6 bighas. The financial statement will be found in the appendix.

Babu Binode Ch. Ghose, District Agricultural Officer, Jamalpur, was in charge of this farm. The Deputy Director of Agriculture, Eastern Circle, visited the farm several times during the year.

J. N. SIRCAR,

Deputy Director of Agriculture, Eastern Circle.

Financial return showing the result of agriculture in Dhanbari Farm for the year ending 31st March 1926.

Debits.

Heads of debits.	Rs.	A.	P.
1. Sale-proceeds in hand at the commencement of the year ..	Nil		
2. (a) Value of last year's farm produce in stock at the commencement of the year for farm use ..	Nil		
(b) Value of purchased stores and other raw materials of the previous year in store at the commencement of the year ..	Nil		
Value of tools and plants and other agricultural implements in hand at the commencement of the year ..	125	0	0
Amount of the outstanding bills payable by the farm at the end of the year ..	Nil		
Amount drawn from the treasury during the year—			
(a) Wages of labourers ..	15	12	6
(b) Contingencies to be under different sub-head of budget—			
(1) Miscellaneous	46	7	6
(2) Petty construction and repairs	35	0	0
(c) Cost of stores, seeds, farm produce received from other farms within or outside the province by adjustment of book transfer ..	5	10	0
	227	14	0
Deduct—On account of capital expenditure (petty construction)	35	0	0
	192	14	0
Net profit	149	13	3
Total ..	342	11	3

Credits.

Heads of credits.	Rs.	A.	P.
1. Sale-proceeds in hand at the end of the year	Nil		
2. (a) Value of the farm produce in stock for sale and farm use ..	Nil		
(b) Value of purchased store and other raw materials in stock at the end of the year	Nil		
Amount of outstanding bills payable by the farm at the commencement of the year	40	4	0
Amount of unrealised sale-proceeds due to the farm at the end of the year ..	Nil		
Value of tools and plant and other agricultural implements in hand at the end of the year	120	0	0
Amount paid in the treasury during the year—			
(a) Amount credited in cash into treasury	182	7	3
(b) Value of stores, seeds, etc., supplied to other farm seed depots within or outside the province by adjustment	Nil		
Total ..	342	11	3

NOTE.—Pay of the demonstrator has not been included as he has to do propaganda work for which the post was created.

APPENDIX XXV.

Annual Report of the Jamalpur Farm for the year 1925-26.

History.—The farm is situated at one end of the subdivisional town of Jamalpur. The land being bounded by the District Board and Local Board roads on the east and south, the situation is quite prominent and the demonstrations conducted on the farm are subject to easy inspection of the public. A few years back a big area of land was acquired by the Government with a view to establish a new district town at Jamalpur. The farm area is a portion of that land; this farm area of 80 bighas was made over to the Agricultural Department in order to work on the same system as at Kishoreganj.

Soil.—The soil is rich sandy loam and is suitable for jute, paddy, sugarcane and tobacco crops. *Rabi* crops can also be grown profitably, provided arrangement for irrigation facility and protection from stray animals be made.

Character of the season.—Rainfall during the year under report was as follows:—

Month and year.	Normal.	Actual.	Number of rainy days.
January 1925	0·37	0·16	2
February ,, ...	0·88	1·41	3
March ,, ...	3·47	2·94	3
April ,, ...	9·66	10·32	13
May ,, ...	15·36	12·84	17
June ,, ...	13·79	10·75	14
July ,, ...	13·99	10·22	23
August ,, ...	12·42	15·67	16
September ,, ...	5·22	14·18	20
October ,, ...	0·46	2·77	8
November ,, ...	0·13	Nil	Nil
December ,, ...	0·11	Nil	Nil
January 1926	0·38	0·51	1
February ,, ...	0·62	Nil	Nil
March ,, ...	3·52	0·76	6

Cultivation.—The land was practically taken over by the department from 1st April 1925, and as it took some time to engage *bargadars* and prepare lands properly, the sowing could only be commenced in the latter part of April. There being heavy showers in the early stages of growth, timely weeding could not be operated, and hence the growth of crop was greatly retarded. Some of the plots were thus entirely damaged and the yield on other plots also were not satisfactory—

Crop.	Area sown (bighas.)	Area harvested (bighas.)	Total outturn.	Outturn per bigha.	Government share half.
Aus paddy—			Md. sr.	Md. sr.	Md. sr.
Kataktara ..	16	4	13 20	3 15	6 30
Chakulia (local) ..	20	8	22 0	2 30	11 0

Out of 36 bighas of land with *aus* paddy, 12 bighas only could be harvested and the damaged crop on the remaining area was ploughed under.

2. **Jute.**—K. B. jute was grown on 12 bighas, but 7 bighas could only be harvested. The total outturn was 25 maunds 30 seers only. The Government half share was 12 maunds 35 seers.

3. **Aman paddy.—**

	B. K.	Md. sr.	Md. sr.	Md. sr.
Indrasail ..	9 0	74 4	8 9	37 2
Local ..	13 10	84 10	6 10	42 5

The season was comparatively favourable for winter paddy. The outturn was on the whole satisfactory.

In the *rabi* season mustard was grown on 3½ bighas; the crop was not good, and 2½ bighas were only harvested. The yield was only one maund per bigha.

Sunn hemp was grown on 30 bighas for green manuring the plots to be sown with jute and *aus* paddy in 1926.

Babu Binod Ch. Ghose, District Agricultural Officer of Jamalpur, was in charge of the farm. He was assisted by a demonstrator.

The Assistant Director of Agriculture, Deputy Director of Agriculture, Eastern Circle, and the Collector of Mymensingh visited the farm during the year.

J. N. SIRCAR,

Deputy Director of Agriculture.

Financial return showing the result of agriculture in Jamalpur Farm for the year ending 31st March 1926.

DEBITS.	Rs.	A.	P.
1. Sale-proceeds in hand at the commencement of the year ..	Nil.		
2. (*a*) Value of last year's farm produce in store at the commencement of the year for farm use	49	7	0
(*b*) Value of purchased store and other raw materials of the previous year in store at the commencement of the year ..	Nil.		
Amount of the outstanding bills payable by the farm at the end of the year	Nil.		
Value of tools and plants and other agricultural implements in hand at the commencement of the year ..	8	12	0
Amount drawn from the treasury during the year—			
(*a*) Pay and allowance of staff ..	1,944	11	0
(*b*) Wages of labourers ..	78	0	0
(*c*) Contingencies to be under different sub-heads of budget—			
(1) Seeds and manures ..	251	4	0
(2) Petty construction and repairs	12	4	0
(3) Miscellaneous	13	4	9
Cost of stores, seeds, farm produce received from other farms within or outside the province by adjustment or book transfer	45	12	0
	2,403	6	0
Deduct on account of capital expenditure (petty construction)	12	4	0
	2,391	2	0

CREDITS.	Rs.	A.	P.
1. Sale-proceeds in hand at the end of the year	Nil.		
2. (*a*) Value of farm produce in stock for sale and farm use—			
Kataktara 3 mds.	9	0	0
Chakulia 1¼ mds.	5	8	0
Indrasail 7½ mds.	30	0	0
Tobacco (not weighed) ..	10	0	0
	54	8	0
(*b*) Value of purchased store and other raw material in stock at the end of the year ..	Nil.		
Amount of outstanding bills payable by the farm at the commencement of the year	Nil.		
Amount of unrealised sale-proceeds due to the farm at the end of the year	Nil.		
Value of tools and plant and other agricultural implements in hand at the end of the year	7	12	0
Amount paid in the treasury during the year—			
(*a*) Amount credited in cash into treasury	595	3	3
(*b*) Value of stores, seeds, etc., supplied to other farms, seed depots within or outside the province by adjustment	Nil.		
	657	7	3
Excess of expenditure over receipts ..	1,733	10	9
	2,391	2	0

APPENDIX XXVI.

Annual Report of the Joydebpur Farm for the year 1925-26.

Introduction.—This farm consists of two separate but closely situated pieces of land—one known as Old Farm comprising over 4 bighas and other known as New Farm comprising over 7 bighas. The farm is maintained by the Bhowal Court of Ward's Estate, Joydebpur, for the purpose of demonstrating and growing improved seeds, such as jute, *aus* paddy, sugarcane, etc., and also for growing of orchards.

The land is bad, uneven and undulating. Only one crop (*kharif*) can be obtained throughout the year.

Mutha is a thriving weed and cannot be got rid of.

Management.—The management of the farm was all along entrusted to the local Agricultural Association. The Secretary of the Association was the disbursing officer while the demonstrator used to supervise the work of the farm only. This system proved to be unsound. The field work as unusually delayed for not want of funds but for want of promptness on the part of the disbursing officer. Besides, the system of account keeping was not in the proper form.

A new system for management of the farm was adopted during the year under report. The Agricultural Demonstrator is to remain responsible for the work of the farm. He is to receive instruction from the President, Agricultural Association, from time to time. The demonstrator will be given a permanent advance of Rs. 25, and will disburse money, but permission for every item of expenditure is to be obtained beforehand from the President of the Agricultural Association. The heavy items of work, *viz.*, earthwork, levelling, fencing, etc., are however to be done by the estate. The account is to be kept in the forms which are in use in the Government farms.

Soil.—The soil is typical red laterite of the Madhupur jungle. The farm is situated on a very high level, and the land having a natural slope, the best part of the soil is washed away every year to a lower level.

Season.—The season was not favourable, there being continuous rain and continuous drought, and as such it affected the crop.

Crops.—The following crops were grown during the year under report:—

Crop.	Old farm.	New farm.
K. B. jute	¾ bigha	3 bighas.
C. O. jute	1 „	....
Kataktara aus	2 bighas	....
Til	¼ bigha	....
Sugarcane	....	⅛th bigha.

The outturn obtained was far below normal, and the reasons for this are as follows:—

(1) The cultivation was undertaken as late as middle of May 1925.

(2) Unfavourable weather and continuous rain followed by continuous drought.

(3) Stray cattle and goats practically damaged the whole crop in the old farm as the present fencing was not sufficiently strong to protect goats, etc. A fencing of "Hercules" type is absolutely necessary for this farm.

Experiments and demonstrations.—An experiment to study the effect of lime and bone on the red soil for jute was undertaken during this year, in addition to usual manurial demonstration for *aus* paddy and jute.

The crop failed for the reasons given above. The experiment will be repeated in the next year.

Orchards.—Apart from demonstration and raising improved seeds, grafts of many varieties of mangoes, litchies and other fruits and pine-apple suckers are being grown. This will bring a permanent income to the farm.

Necessary grafts, etc., were purchased during the year for planting in another piece of land measuring 2½ bighas. The area has been cleaned and fenced. Planting will be done in June-July 1926.

Receipts and expenditure.—

Expenditure.

	Rs.	A.	P.
Cultivation charges includes cultivation of land for next year's crops	236	6	0
Purchase of seed, manures and grafts	38	1	0
Laying out and fencing	297	14	0
Miscellaneous	18	10	9
Total ..	590	15	9

Receipts.

Sale-proceeds for jute seed	90	0	0
Sale-proceeds for jute fibre	67	7	0
Value of stock in hand	14	13	0
	172	4	0

	Md.	Sr.
Kataktara	1	38
Sugarcane cuttings ..	500	Nos.

Congratulations.—Rai Saheb J. N. Banerjee, President of the Agricultural Association, took special care for the improvement of the farm. It is through his initiative that uncultivable lands have been reclaimed for orchards. He tried his best for advancement of improving agriculture amongst the Raj tenants. My hearty thanks are due to him.

J N. SARKAR,

Deputy Director of Agriculture,
Eastern Circle (Offg.).

APPENDIX XXVII.

Annual Report of the Baratia Farm for the year 1925-26.

Baratia is a village four miles away from Tangail subdivisional headquarters and two miles from Santosh. The small farm comprises 27 bighas of high land. It was under six annas Court of Wards' estate up to the 12th October 1925. With the release of the estate the management of the farm was made over to the zemindar on the 13th October.

It is a beautiful farm representing the high land of the locality. The soil is sandy loam and is suitable for *aus* paddy, jute, potato, tobacco and various *rabi* crops.

Samples of soil and sub-soil have already been taken by the Agricultural Chemist for analysis.

The farm is doing good work among the tenants who are taking up the cultivation of the new varieties of crops grown on the farm and introducing the manures and methods on their own land. Good seeds are supplied to the neighbouring cultivators from this farm.

Though the season was not very favourable for *kharif* crops, the result was on the whole satisfactory.

The main crops of the *kharif* season grown on the farm are:—

Crop.	Area sown.	Outturn per bigha.	Total outturn.
	B. K.	Md. sr.	Md. sr.
Kataktara	3 15	5 15	20 5
K. B. jute	16 0	5 0	80 0
Juar for fodder	4 15	(fed in green stage as fodder).	

In *rabi* season, too, good crops, namely, mustard, potato, wheat and English vegetables were successfully grown.

From an economic point of view the cultivation fetched a good income. There is a demonstrator on the spot in charge of the farm. It is gratifying that there was a margin of profit of Rs. 800 or so after meeting all the expenses including that of establishment.

There is a good breeding bull on the farm for the benefit of the public. The bull was purchased from the Rangpur Cattle Farm.

Management and inspection.—Babu Kshitish Ch. Bose was the demonstrator there up to July 1926, when he resigned the post. Since then Babu Pratul Ch. Ghosh is working there as demonstrator. The District Agricultural Officer of Jamalpur and the Deputy Director of Agriculture, Eastern Circle, visited the farm several times during the year.

J. N. SARKAR,

Deputy Director of Agriculture,
Eastern Circle (Offg.).

APPENDIX XXVIII.

Annual Report of the Brahmanbaria Court of Wards' Farm for the year 1925-26.

This small farm, maintained by the Sarail Ward's Estate, is situated on the District Board road from Brahmanbaria to Comilla. It is one mile away from the Brahmanbaria town. The area of the farm is only 15 bighas, of which 10½ bighas were under cultivation, the rest being occupied by roads, tanks and buildings, etc. The soil is light loam and quite suitable for *aus* paddy, *aman* paddy and jute.

Season.—During the year under report, the rainfall was less than normal and not equally distributed. It was very short during the growing period of paddy, whereas the rainfall in the months of September and October was heavy. The following table will show the amount of rainfall month by month :—

1925.			
April	...	...	9·83
May	...	...	14·1
June	...	...	10·22
July	...	...	4·52
August	...	...	7·05
September	...	...	15·24
October	...	...	6·77
November	...	...	Nil
December	...	...	Nil
1926.			
January	...	...	·53
February	...	...	·30
March	...	...	3·72
			72·28

A short statement of cultivation of the crops grown on the farm is given below :—

Crop.	Area.	Yield of grain.	Yield of Straw.	Yield per bigha.
	B. k. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.
Aus paddy—				
Kataktara	1 18 0	10 30 0	15 35 0	5 30 0
Lal Satiya	1 15 0	11 32 8	13 35 0	6 30 0
Jute—				
K. B. jute	4 2 0	33 10 0	....	8 8 0
G. O. jute				
Single cropped *aman*—				
Indrasail	1 17 8	15 35 0	19 20 0	8 20 0
Sailchikan	0 5 0	1 35 0	2 20 0	7 20 0
Sugarcane—*Tanna*	0 2 0	600 canes	Rs. 40	400 0 0
Double cropped—				
Indrasail after *Kataktara*	0 5 0	1 35 0	2 5 0	7 20 0
Sailchikan after *Kataktara*	1 13 0	10 20 0	10 20 0	6 10 0
Indrasail after *Lal Satiya aus*	0 10 0	3 25 0	4 10 0	7 10 0
Sailchikan after *Lal Satiya aus*	1 18 0	6 10 0	7 5 0	4 0 0
Indrasail after jute	0 8 0	2 20 0	3 0 0	6 10 0
Sailchikan after jute	3 10 0	20 15 0	21 35 0	5 35 0
Sailchikan after seedling	0 5 0	0 30 0	0 35 0	3 0 0
Rabi crops—				
Mustard after jute	0 4 0	0 10 0	....	1 10 0
Bhengi tobacco after seedling	0 2 8	0 15 0	....	3 0 0

On the bank of the tank measuring about 2 kathas *tanna* canes were grown. Six hundred healthy canes were obtained and sale-proceed from canes was Rs. 40.

It is evident from the above statement that the result was on the whole very satisfactory. The total sale-proceed deposited to treasury during the year was Rs. 1,198-4.

The small poultry on the farm comprises two cocks and four hens of Chittagong breed. The object of this small poultry is to introduce the better breed in the locality, 44 chickens were sold at Re. 1-4 per head during the year.

There is a good studbull kept on the farm for benefit of the public. It was bought from the Rangpur Cattle Farm, 34 cows were served during the year. The health of this bull and the pair of bullocks maintained for cultivation was quite good during the year.

Demonstrator Munshi Mashur Rahaman was in charge of the farm. He is a good worker, the farm was kept neat and clean and the field operations were timely done. The manager of the estate took as usual special interest in the farm. During the year an allotment of Rs. 1,000 was in the budget in addition to the farm budget, for financing the demonstrator to arrange the supply of recommended varieties of seeds and manures among the tenants. The most important of the seeds supplied during the year was 14 maunds of jute seed.

Visits.—The Collector of Tippera and the Subdivisional Officer of Brahmanbaria visited the farm. The Deputy Director of Agriculture, Eastern Circle, and the District Agricultural Officer of Comilla made frequent inspection.

Financial statement of the Agricultural Farm, Brahmanbaria, for the year 1925-26.

Receipts.	Rs.	A.	P.	Rs.	A.	P.
1. Sale-proceeds credited to Treasury on behalf of the Estate ..	1,198	4	0	....		
Deducted sale-proceed of last year 1924-25 ..	39	9	0	1,158	11	0
2. Value of farm produce in hand on 1st *Baisak* 1333 B.S. or 14th April 1926 ..	....			83	3	6
Total ..				1,241	14	6

Expenditure.	Rs.	A.	P.
1. Labour	379	3	6
2. Cattle food for two bullocks and one breeding bull ..	418	15	9
3. Implements, seeds and manures	145	8	6
4. Fowl food	51	9	0
5. Petty construction and repairs	94	0	0
6. Miscellaneous	49	12	9
	1,139	1	6
Net profit ..	102	13	0
Total ..	1,241	14	6

J. N. SIRKAR,

Deputy Director of Agriculture, Eastern Circle.

APPENDIX XXIX.

Annual Report of the Gayhatta Farm for the year 1925-26.

This is a small farm of 11 bighas situated one mile north of steamer station Benanai. The farm is maintained by the Court of Wards' Estate, Gayhatta, in the Tangail subdivision.

The soil is rich sandy loam and suited for jute and *rabi* crops. As it is subject to inundation by the river Jumna in the rainy season, the farm gets a good deposit of silt every year.

The following crops were grown:—

Crop.	Area sown (bighas).	Total outturn.
		Md. sr.
Jute	9	78 10
Aus paddy	2	Failed.
Matikalai (*rabi*)	6	(Crop fed in green stage.)

Munshi Mubarak Hossain, Demonstrator, was in charge of the farm throughout the year. The Deputy Director of Agriculture and the District Agricultural Officer of Jamalpur visited the farm during the year.

J. N. SARKAR,

Deputy Director of Agriculture,
Eastern Circle (Offg.).

APPENDIX XXX.

Annual Report of the Durgapur (Chittagong) School Farm for the year 1925-26.

This small farm is attached to the Durgapur High English School in the district of Chittagong. It is run by the Head Master of the school. There is a teacher of agriculture to train the students in agriculture. The land is suitable for growing paddy, jute, sugarcane, pulses, potatoes and vegetables.

Season.—The rainfall was irregular, and continued up to the end of winter. *Aman* paddy suffered due to the shortage of water during the growing season, whereas the *rabi* crops were damaged by occasional heavy rains in winter.

Crops.—The report submitted by the Head Master shows that—

(1) the varieties of paddy (both *aus* and *aman*) recommended by the department as well as some heavy yielding local varieties were grown on the farm;

(2) *tanna* canes were grown on a bigger scale this year and *gur* of excellent quality prepared;

(3) potatoes were also grown; the planting was late owing to heavy rains in autumn. The crop suffered from several showers of untimely rains;

(4) several varieties of pulses, namely, gram, *sonamung* and cowpea were successfully grown; and

(5) cabbage, tomatoes, Contai radish and other country vegetables were tried on the farm. The cultivation of cabbage was a great success with fish meal.

In the report of the Head Master, no definite results of above cultivations were given. The financial statement given below will show that the sale-proceed of the year under review is more than double of last year. But the expenditure under labour has not been reduced to the amount as could be expected. It is desirable that the students do some practical works on the farm more systematically when undergoing training, and thus make the farm a paying concern.

Receipts.	Rs.	A.	P.
Balance brought forward from last year's account	27	0	3
1. Sale-proceeds ..	690	15	9
2. Government subsidy for 2 years	600	0	0
3. Donation	300	0	0
4. Loan	200	0	0
5. Advance made by the committee	431	0	0
6. Price of a pair of bullocks	160	8	0 (*a*)
Total ..	2,409	8	0

Expenditure.	Rs.	A.	P.
1. Farm	788	0	9
2. Magazine	1	5	0
3. Government pleader's fee	240	0	0
4. Agricultural teacher's allowance (*b*) ..	102	8	6
5. Erection of cow-shed ..	131	0	6
6. For buying a pair of bullocks and calf ..	188	0	0
7. Contingencies ..	22	12	3
8. Loans repaid ..	300	0	0
9. Advance repaid ..	491	0	0
10. Interest on loan ..	96	10	9
11. Miscellaneous ..	2	9	6
Total ..	2,363	15	3
Balance in hand ..	45	8	9
Grand total ..	2,409	8	0

N. B.—(*a*) Old pair of bullocks was sold for Rs. 160-8.
(*b*) Agricultural teacher is quartered in the hostel to supervise the farm which is attached and is paid his hostel charges.

Manures.—The following manures were tried on the farm:—

(1) Cowdung and wood ashes as general manure.
(2) Oilcake and fishmeal on vegetables.
(3) Fishmeal and nitrate of soda on sugarcane.
(4) *Dhaincha* as green manure.

Visits.—The farm was visited by the District Magistrate, District Inspector of Schools, Inspector of Co-operative Societies and District Agricultural Officer of Chittagong.

J. N. SIRKAR,
Deputy Director of Agriculture, Eastern Circle (Offg.).

APPENDIX XXXI.

Annual Report of the Government Cattle Farm, Rangpur, for the year 1925-26.

Introduction.—The farm was acquired in March 1913 with the object of improving the country cattle of Bengal by selection as well as by crossing with up-country bulls of pure strain of Hissar breed.

Situation.—This farm is situated towards the east of an about one mile from Rangpur town and close to the railway station. It consists of high, medium and low lands, the total area of which is 333·4 acres.

Soil.—The soil is sandy loam and particularly the medium lands are suitable for fodder cultivation and transplanted paddy is grown on the low lands.

Establishment.—Babu Atal Behari Sen, an officer of the Upper Subordinate Service, was in charge of the farm from 1st April 1925 to 13th June 1925 when he was deputed to the Imperial Institute of Animal Husbandry and Dairying, Bangalore, for special course of training for three months. On completing the course, he again took over on the 18th September 1925 and remained in charge till the end of the year. During his absence, Babu Rebati Mohan Roy, Assistant Superintendent, Cattle Section, officiated in his place. He was assisted by one Assistant Superintendent and two overseers in the Cattle Section and one Assistant Superintendent and two overseers in the Cultivation Section and a clerk.

Petty Repairs and Construction.—During the year under report, a quarter has been erected for providing accommodation to an overseer of the farm, want of which was keenly felt in previous years. This has finally solved out of the house problem of the staff of this farm.

Four permanent paddocks for cows; also calf-exercising pens are under construction. It is expected that the work will be completed in the beginning of the next financial year. But the remodelling of the existing cow sheds according to the modern scientific principles, in respect of sanitation and accommodation, has not yet taken up.

Cattle Breeding Experiment.—It is gratifying to note that the cattle breeding experiment which has been conducted since the year 1918 has been attended with distinct success. Most of the Hissar Deshi cows are yielding more than 3,000 lbs. (approaching to 4,000 lbs.) of milk in one lactation. In the Deshi herd too the improvement is also very perceptible. Some of the cows are yielding about 4,000 lbs. in one lactation period of 305 days and others from 2,500 lbs. to 3,000 lbs. of milk in one lactation, and the minimum standard of lactation has been raised to 2,500 lbs. of milk in 305 days. Cows which are yielding less than 2,500 lbs. are rejected from the herd.

The Hissar Deshi cross bullocks are also well built and are very suitable for cart work. The Tharpakar herd has been sent to the Dacca Farm. It was observed here that the crosses between the Tharpakar and Deshi were not so satisfactory as was expected in regard to stature, and it has therefore been decided for the present to adhere to the Hissar Deshi cross. Two Tharpakar Deshi cross heifers calved during the year under report. They were found superior in milking strain to their country dam, but inclined to lack robustness. The Tharpakar Deshi cross bullocks are smaller in size, and are apparently the compact than cows breeding Hissar Deshi bullocks. The respective yields of all cows in the herd is given in Table I overleaf.

TABLE I.

Classification of cows according to the maximum total yield of milk.

Name of cows.	Below 2,500 lbs. kept under observation.	Name of cows.	2,500 to 3,000 lbs.	Name of cows.	3,000 lbs. to 3,500 lbs.	Name of cows.	3,500 lbs. to 4,000 lbs.
Kiron ..	2,497	Tribeni ..	2,995½	Pramila ..	3,378	Brahmani ..	3,953
Dhanca ..	2,482½	Suruchi ..	2,976	Sukumari ..	3,209½	Niroo ..	3,938
Gauri ..	2,479	Purnima ..	2,861½	Sunity ..	3,150½	Karoona ..	3,857
Santa ..	2,435	Durga ..	2,856	Taruni ..	3,117½	Menoka ..	3,799
Chotki ..	2,388½	Manisha ..	2,820½	Mrinmoyee ..	3,076½	Sukeshi ..	3,794
Nari ..	2,366	Chitra ..	2,735	Thakurani ..	3,060	Taroo ..	3,589½
Sumati ..	2,302½	Chhaya ..	2,613½	Chapala ..	3,014½	Depia ..	3,585½
Budhni ..	2,282	Sunni ..	2,572½	Suhashini ..	3,010½	Aninda ..	3,554
Sarit ..	2,254	Tatini ..	2,537½			Juthi ..	3,503½
Prava ..	2,218½	Gunjri ..	2,515½				
Sree ..	2,218						
Motley ..	2,200½						
Jayanti ..	2,189½						
Chayanika ..	2,136½						
Purni ..	2,116½						
Champa ..	2,041						
Ashmani ..	2,004½						
Chinmoyee ..	1,845½						
Nihar ..	1,499						
Dhaneshwari ..	1,403½						

The average daily yield per cow in different herds is tabulated below:—

TABLE II.

Month and year.				Half Hissar Bengal herd.	Country herd.
April	1925	..	..	12·23	9·93
May	,,	..	..	11·77	8·41
June	,,	..	..	9·44	6·97
July	,,	..	..	8·56	6·10
August	,,	..	..	8·79	5·25
September	,,	..	..	8·68	5·56
October	,,	..	..	9·08	5·07
November	,,	..	..	9·24	6·99
December	,,	..	..	8·90	8·01
January	1926	..	..	7·77	8·48
February	,,	..	..	7·68	9·14
March	,,	..	..	7·74	8·43

The total yield of milk of some individual cows with their lactation period during the year under report is given below:—

TABLE III.

Country Herd.

Serial No.	Brand No.	Name of cows.	Total yield in lactation.	No. of days in lactation.	Average daily yield during maximum period of 2 weeks.	Average daily yield throughout whole lactation.
			lbs.		lbs.	lbs
1	39	Gunjri ..	2,305½	316	14·86	7·30
2	76	Brahmani ..	2,675	301	16·21	8·88
3	77	Pramila ..	2,989	263	20·30	11·40
4	89	Niroo ..	3,855	316	17·21	12·20
5	185	Gauri ..	2,351	272	15·36	8·64
6	209	Prova ..	2,123½	247	15·36	8·60
7	242	Suruchi ..	2,957½	302	18·00	9·79
8	249	Chhaya ..	2,259	300	12·57	7·53
9	281	Nari ..	2,053	303	13·46	6·77
10	334	Chitra ..	2,499	293	14·57	8·53
11	411	Ashmani ..	2,004½	306	10·83	6·55
12	422	Chayanika ..	2,136½	288	14·00	7·42

Hissar—Bengal Herd.

1	18	Depia ..	3,201½	320	18·56	9·59
2	291	Taru ..	2,871	304	20·00	9·44
3	328	Chapala ..	3,014½	306	18·70	9·85
4	355	Karoona ..	2,884	297	25·00	9·71
5	372	Taruni ..	3,117½	295	19·06	10·57
6	346	Sukeshi ..	3,794	305	22·30	12·44
7	330	Sumati ..	2,302½	242	19·00	9·51
8	377	Sarit ..	2,254	233	19·13	9·68
9	356	Kiron ..	2,497	246	23·00	10·15
10	373	Aninda ..	3,554	304	25·21	11·70

Hissar—Bengal Herd—concld.

Serial No.	Brand No.	Name of cows.	Total yield in lactation.	No. of days in lactation.	Average daily yield during maximum period of 2 weeks.	Average daily yield throughout whole lactation.
			lbs.		lbs.	lbs.
11	417	Sunity ..	3,150½	307	19·36	10·26
12	413	Mrinmayee ..	3,076½	306	17·80	10·05
13	384	Prunima ..	2,861½	297	17·66	9·63
14	396	Thakurani ..	3,060	301	22·86	10·16
15	419	Suhashini ..	3,010½	303	17·71	9·93
16	418	Dhaneswari ..	1,403½	261	10·86	5·37
17	427	Santa ..	2,435	272	12·73	9·00
18	184	Durga ..	2,688	302	17·00	8·00

Weaning Process.—The practice of weaning calves from birth has been pursued with success. It is now being tried on the whole herd, except a few cows, which are too old to take to new ways.

The strength of the whole herd as it stood on the 31st March 1926 is enumerated below :—

TABLE IV.

1.—Cows—			
Cross Hissar Bengal	22		
Country	29		
	—	51	
2. Bulls—			
Hissar	2		
Cross Hissar Bengal	3		
Country	3		
	—	8	
3. Young stock male one year and above—			
Country	7		
Cross Hissar Bengal	10		
Tharpakar	1		
Cross Tharpakar Bengal	1		
Cross Hisser Tharpakar Bengal	4		
	—	23	
4. Young stock male below one year—			
Country	5		
Cross Hissar Bengal	7		
Cross Tharpakar Bengal	2		
Cross Hissar Tharpakar Bengal	1		
	—	15	

5. Young stock female one year and above—			
Country	9		
Cross Hissar Bengal	14		
Cross Tharpakar Bengal	1		
	—		24
6. Young stock female below one year—			
Country	5		
Cross Hissar Bengal	5		
Tharpakar	1		
Cross Tharpakar Bengal	4		
	—		15
7. Bullocks—			
Country	38		
Cross Bengal Hissar	11		
Cross Tharpakar Bengal	7		
Cross Hissar Tharpakar Bengal	4		
Tharpakar	2		
	—		62
Grand Total ..			198

The reduction in number is due to the taking out of the Tharpakar herd from this farm.

Disease and Casualties.—During this year many cattle of the locality were swept away by a severe outbreak of rinderpest. Thousands of cattle were seen to die in this district. There was an outbreak in the farm herd among sucklings, but timely and prompt measure saved the situation altogether without inflicting the loss of a single animal. The infected animals were segregated, well cared for, and proper treatment and nursing were given, and those that were not attacked were inoculated with anti-rinderpest serum which effectively stopped the spread of the disease in the herd, and after the inoculation, no further attack occurred. When the attack of the rinderpest subsided, the foot and mouth disease broke out in the herd. All the cattle, specially the milch animals and the bulls, suffered heavily, but owing to proper care and treatment there was no loss of life.

Three old bullocks and twenty-four calves died during the year from various ailments as shown in Table V.

TABLE V.

Casualty List.

Class of animals.	Number of animals died.	Cause of death.
Bullocks ..	3	Old age and fatty degeneration of heart and liver, impaction and pluresy.
Calves ..	3	Worms, concussion of brain and deformity and premature birth.
Do. ..	5	Debility.
Do. ..	2	Septic peritonitis.
Do. ..	2	Dysentry.
Do. ..	5	Pneumonia.
Do. ..	1	Tympanitis.
Do. ..	3	Impaction.
Do. ..	1	Diarrhœa.
Do. ..	2	High fever and retention of urine, abscess and rheumatism.

Simultaneous inoculation of the herd against Rinderpest.—The whole of the herd has now been inoculated, and is there permanently protected from this

disease. It is gratifying to note that there was no attack of rinderpest among the cattle inoculated by serum simaltaneous method even though no measure, for their protection, was taken at all during the outbreak of rinderpest in the herd. During this year 129 animals in the herd were inoculated. The Veterinary Adviser to the Government of Bengal with his assistants performed the operation during the second week of February 1926 with perfect success. There was no death, except a single case which died of Pluro Pheumonia during the course of the operation. Thanks are due to the Veterinary Department for their successfully conducting the process.

The public are invited to adopt this process, which will be immensely useful for protecting their cattle from the ravaging attack of the deadly disease "Rinderpest".

General Health of the Cattle.—The general health of the cattle of the herd remained satisfactory during the year under report.

Selection and Elimination of Cattle.—A meeting of the selection Committee was held at the Rangpur Cattle Farm on the 13th June 1925, consisting of the following officers.

1. Mr. P. J. Kerr, Veterinary Adviser to the Government of Bengal.
2. Mr. K. McLean, Assistant Director of Agriculture, Bengal.
3. Mr. J. N. Sirkar, Deputy Director of Agriculture, Northern Circle.
4. Babu Atal Behari Sen, Superintendent, Cattle Farm, Rangpur.

The object of the meeting was to reject the unsuitable animals.

The following animals were weeded out:—

Class of animals.	Number of rejected cattle.	Cause of elimination.
Cows ..	8	Below milk yield standard.
Do. ..	1	Aged.
Do. ..	2	English blood.
Do. ..	2	Below standard weight.
Do. ..	2	Below standard both in milk and weight.
Do. ..	7	Tharpakar and Tharpakar crosses.
Bull ..	1	English blood.
Do. ..	3	Tharpakar.
Do. ..	1	Aged.
Heifers ..	27	Tharpakar and Tharpakar crosses.
Do. ..	7	English blood.
Do. ..	1	Barren.
Do. ..	1	White muzzled.
Bull calves ..	24	Devoid of good points of a breeding bull.

Following statement show the distribution of bulls and supplies of bullocks to different Government farms and other bodies during 1925-26.

List of bulls distributed.

Serial No.	Brand No.	Name of the bull.	Date of supply.	To whom supplied.
1	499	....	11-10-25	District Board, Diamond Harbour.
2	628	Ferdinand ..	3-11-25	Dacca Farm.
3	631	....	3-11-25	Ditto.
4	333	Sankar ..	8-12-25	Pabna Farm.
5	454	Halifax ..	18-1-26	Manager, Mathurapur Zamindary Estate, Malda.
6	532	....	22-3-26	District Board, Rangpur.
7	272	Sagar ..	27-3-26	Bogra Farm.

Supply of bullocks to Government farms.

1. Burirhat Farm, Rangpur ... ... 3 pairs.
2. Demonstration Farm, Rangpur ... ... 2 pairs.

The rainfall and climatic conditions during the year are given below:—

Rainfall Statistics, 1925-26.

Month and year.	Actual rainfall.		Normal rainfall.	
	Amount of rainfall in inches.	Number of rainy days.	Amount of rainfall in inches.	Number of rainy days.
April 1925	10·10	16	3·01	4·3
May ,, ...	12·53	12	10·66	11·5
June ,, ...	10·28	20	18·00	15·7
July ,, ...	9·07	21	15·89	15·0
August ,, ...	17·48	19	12·80	15·7
September ,, ...	17·27	19	14·24	13·3
October ,, ...	15·19	4	4·87	4·4
November ,, ...	0·08	1	0·12	·2
December ,, ...	....	....	0·05	·2
January 1926	0·35	4	0·50	·9
February , ...	....	....	0·50	1·2
March ,, ...	1·39	8	1·25	1·8
Total ..	80·14	124	8·89	84 2

Climatic conditions were comparatively favourable during the *kharif* season, but during the *rabi* season, lack of rainfall was keenly felt particularly in the months of November, December and February. A few showers in the beginning of March saved the late sown crops from utter failure.

Fodder crops.—Maize, *juar* and cowpea, etc., in the *kharif* season and oats and peas in the *rabi* were sown as fodder crops. Japanese millet (bazra) seeds of which were sent from the Dacca Farm was tried in *rabi* season. But the crop failed owing to insufficient germination. Guinea grass is cultivated, and the roots are transplanted for multiplication along the footpaths of the various plots of land. It will prove an excellent fodder crop on the non-cultivated area, such as alongside drains, footpaths, etc., which remain fallow during the whole year, and such areas could all be utilised for this purpose.

The results of crops in experimental area and area under economic basis are given herewith in Table VI.

Silage.—To supplement the green fodder, *juar* and maize crops, were ensiled in the *pucca* silo. The cattle ate with relish. A sample of the silage was sent to Cooch Behar Exhibition to show its utility when the scarcity of green fodder is felt.

Demonstration and Exhibition.—An Agricultural and Industrial Exhibition was held at Cooch Behar under the auspices of the State in March 1926. The Assistant Superintendent in charge Cattle Section was sent to Cooch Behar Exhibition for giving a butter making demonstration by scientific method. Samples of fodders and feeds of cattle and improved implements were also sent to the Exhibition. Two bulls were also exhibited. The public took much interest in these, and it is understood the State ordered a complete equipment for butter making.

Visits and Inspection.—In the year under report, the farm was visited by the Director of Agriculture, Bengal, Assistant Director of Agriculture, Bengal, Veterinary Adviser to the Government, Bengal, and Agricultural Chemist to the Government of Bengal. The farm was under the direct control of the Deputy Director of Agriculture, Northern Circle. It was also visited by the Commissioner, Rajshahi Division, the Collector of Rangpur and Mr. S. G. Hart, I.C.S.

Practical Training in Agriculture.—One cultivator's son, was for imparting practical training in the process of cultivation. Two young men were also under training to learn the preparation of butter, feeding of calves, nursing of cattle, etc.

A. R. MALIK,

Deputy Director of Agriculture,
Northern Circle.

Result of crop-cutting experiment on juar and maize, 1925-

Serial No. of sub-lots.	Name of varieties	Date of sowing.	Date of harvesting.	Actual yield from 1-20th acre.		Yield per acre.	
				Mds.	srs.	Mds.	srs.
1	*Juar* ..	9th May 1925.	8th October 1925	24	14	487	0
2	Maize ..	Ditto ..	27th July 1925	14	21	290	20
3	*Juar* ..	Ditto ..	8th October 1925.	21	12	426	0
4	Maize ..	Ditto ..	27th July 1925	14	35	297	20
5	*Juar* ..	Ditto ..	8th October 1925.	20	26	413	0
6	Maize ..	Ditto ..	27th July 1925	12	24	252	0
7	*Juar* ..	Ditto ..	8th October 1925.	19	29	394	20
8	Maize ..	Ditto ..	27th July 1925	14	25	292	20
9	*Juar* ..	Ditto ..	8th October 1925.	16	14	327	0
10	Maize ..	Ditto ..	27th July 1925	10	35	217	20
11	*Juar* ..	Ditto ..	8th October 1925.	17	35	357	20
12	Maize ..	Ditto ..	27th July 1925	12	0	240	0
13	*Juar* ..	Ditto ..	8th October 1925.	17	8	344	0
14	Maize ..	Ditto ..	27th July 1925	13	36	278	0
15	*Juar* ..	Ditto ..	8th October 1925.	13	7	263	20
16	Maize ..	Ditto ..	27th July 1925	20	35	417	20

	Average outturn per plot.	Average outturn per acre.
	Md. sr. ch.	Md. sr. ch.
Maize	14 11 6	285 27 8
Juar	18 33 2	376 22 8

It will be seen from the table above that the outturn of *juar* is much higher than that of maize. But maize crop matured much earlier than *juar*.

Result of crop-cutting experiment on local juar and Sundhia juar, 1925-26.

No. of plots.	Name of varieties.	Date of sowing.	Date of harvesting.	Actual outturn from 1-20th acre.		Yield per acre.	
				Md.	sr.	Md.	sr.
1	Local *Juar* ..	4th July 1925	9th September 1925.	19	15	387	20
2	Sundhia *juar* ..	Ditto ..	Ditto ..	15	14	307	0
3	Local *juar* ..	Ditto ..	Ditto ..	13	20	270	0
4	Sundhia *juar* ..	Ditto ..	Ditto ..	9	20	190	0
5	Local *juar* ..	Ditto ..	Ditto ..	9	14	187	0
6	Sundhia *juar* ..	Ditto ..	Ditto ..	7	0	140	0
7	Local *juar* ..	Ditto ..	Ditto ..	5	30	115	0
8	Sundhia *juar* ..	Ditto ..	Ditto ..	9	24	192	0
9	Local *juar* ..	Ditto ..	Ditto ..	16	5	322	20
10	Sundhia *juar* ..	Ditto ..	Ditto ..	10	26	213	0

	Average yield per plot.			Average yield per acre.		
	Md.	sr.	ch.	Md.	sr.	ch.
Local *juar*	12	32	12	256	15	0
Sundia *Juar*	10	16	12	208	15	0

It will be seen from the table that local *juar* beat Sundhia *juar* by 48 maunds per acre. But quality of Sundhia *juar* was far superior to that of local *juar*, having less formation of pit in the stack. The cattle like it more than local *juar*.

Result of crop-cutting experiment on cowpea and mashyem kalai, 1925-26.

No. of plots.	Name of varieties.	Date of sowing.	Date of harvesting.	Actual yield per plot.		Yield per acre.	
				Md.	sr.	Md.	sr.
1	Cowpea ..	30th May 1925	29th October 1925.	10	20	210	0
2	*Mashyem kalai* ..	Ditto ..	Ditto ..	8	35	177	20
3	Cowpea ..	Ditto ..	Ditto ..	7	5	142	20
4	*Mashyem kalai* ..	Ditto ..	Ditto ..	14	7	283	20
5	Cowpea ..	Ditto ..	Ditto ..	12	5	242	20
6	*Mashyem kalai* ..	Ditto ..	Ditto ..	8	25	172	20
7	Cowpea ..	Ditto ..	Ditto ..	8	30	175	0
8	*Mashyem kalai* ..	Ditto ..	Ditto ..	13	35	277	20

	Average per plot.			Outturn per acre.		
	Md.	sr.	ch.	Md.	sr.	ch.
Cowpea	9	25	0	192	20	0
Mashyem kalai	11	15	8	227	30	0

It will be seen from the table above the *Mashyem kalai* beat cowpea by 35 maunds 10 seers. *Mashyem* could stand water-logging during heavy rainfall, but cowpea could not.

Result of the crop-cutting experiment on Pusa wheat No. 12 and oats, 1925-26.

No of plots.	Name of varieties.	Date of sowing.	Date of harvesting	Actual yield from 1-20th acre.		Yield per acre.	
				Md.	sr.	Md.	sr.
1	Oats ..	15th November 1925.	14th March 1926.	3	20	70	0
2	Wheat ..	Ditto ..	Ditto ..	2	20	50	0
3	Oats ..	Ditto ..	Ditto ..	3	30	75	0
4	Wheat ..	Ditto ..	Ditto ..	2	0	40	0
5	Oats ..	Ditto ..	Ditto ..	3	10	65	0
6	Wheat ..	Ditto ..	Ditto ..	2	0	40	0
7	Oats ..	Ditto ..	Ditto ..	4	20	90	0
8	Wheat ..	Ditto ..	Ditto ..	3	0	60	0
9	Oats ..	Ditto ..	Ditto ..	3	30	75	0
10	Wheat ..	Ditto ..	Ditto ..	4	20	90	0
11	Oats ..	Ditto ..	Ditto ..	4	30	95	0
12	Wheat ..	Ditto ..	Ditto ..	2	20	50	0
13	Oats ...	Ditto ..	Ditto ..	4	30	95	0
14	Wheat ..	Ditto ..	Ditto ..	2	20	50	0
15	Oats ..	Ditto ..	Ditto ..	3	0	60	0
16	Wheat ..	Ditto ..	Ditto ..	2	0	40	0
17	Oats ..	Ditto ..	Ditto ..	2	10	45	0
18	Wheat ..	Ditto ..	Ditto ..	1	35	37	20
19	Oats ..	Ditto ..	Ditto ..	2	5	42	20
20	Wheat ..	Ditto ..	Ditto ..	1	30	35	0

	Average per plot.	Outturn per acre.
	Md. sr ch.	Md. sr. ch.
Oats	3 22 8	71 10 0
Pusa wheat, No. 12	2 18 8	49 10 0

It will be seen from the table above that oats beat wheat by 22 maunds per acre. Oat crop is superior to wheat regarding outturn and quality also.

TABLE VI.

TABLE

The results of crops in experimental area and area under economic basis and

Plot Nos.	Area in the map in bighas.	Area cropped.	Name of crop.	Cost of cultivation.	Actual outturn.	
	Experimental area—Kharif.					
	B. c. ch.	B. c. ch.		Rs. A. P.		Mds sr. ch.
25	15 0 0	0 12 0	Maize (irrigated) ..	14 9 3	Green fodder ..	63 7 0
25	....	10 10 0	Experimental—*Juar*, maize, cowpea, *Mashyem kalai*, etc.	236 7 3	Maize ..	362 3 0
					Juar	476 11 0
					Cowpea ..	38 20 0
					Mashyem kalai ..	45 22 0
					Bhuru ..	36 2 0
					Sundhia *juar* ..	86 4 0
25	....	0 5 0	2nd E. B's experiment with grasses.			
		11 7 0				
	Rabi.					
25	3 0 0	3 0 0	Comparative experiment. Oats *versus* wheat.	44 6 9	Fodder wheat ..	24 25 0
					Oats	35 25 0
20	4 0 0	4 0 0	2nd E. B's experiment.	16 14 6	Japanese millet ..	24 30 0
					Buck wheat seed ..	0 4 0
	7 0 0	7 0 0				
	Economic area (kharif).					
15	28 5 0	24 0 0	Indrasail paddy ..	314 12 9	Grain	100 20 0
					Straw	192 0 0
3	21 0 0	15 0 0	Ditto ..	170 14 9	Grain	30 0 0
					Straw	120 0 0
14	9 10 0	9 10 0	Early maize ..	202 9 9	Fodder	543 35 0
20	15 0 0	15 0 0	Maize ..	173 8 3	Fodder	1,242 24 0
25	1 10 0	1 10 0	Pine-apple ..	2 12 6	....	....
27	16 0 0	16 0 0	Maize ..	249 12 0		881 37 0
27	18 0 0	18 0 0	*Juar* ..	256 14 6		1,622 15 0
	109 5 0	99 0 0				
	Rabi.					
20	32 0 0	28 0 0	Oats	284 1 0	Green fodder ..	140 20 0
					Hay	300 0 0
5	18 0 0	7 5 0	Oats	60 9 0	Green fodder ..	160 25 0
					Hay	80 0 0
6	18 0 0	8 0 0	Oats	92 0 6	Green fodder ..	45 0 0
					Hay	90 10 0

No. VI.

non-experimental are given below:—

Outturn per acre.	Rate per maund.	Actual value.	Cost of cultivation per acre.	Value per acre.	Profit or loss per acre.	Remarks.
Md. sr. ch.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	
325 35 0	0 8 0	32 9 6	72 14 3	162 15 0	90 0 9	Profit.
....	0 8 0					
....	0 6 0					
....	0 8 0					
....	0 8 0	447 14 0	....	....	211 6 9	Profit in the experimental area.
....	0 6 0					
....	0 6 0					
						Experiment is conducted for the propagation of seed and also testing some other fodder crops in a small plot.
24 25 0	0 8 0	39 0 6	44 6 9	39 0 6	5 6 3	Loss.
35 25 0	0 12 0					
....	0 6 0	9 14 6	....	....	....	Experiment is conducted for the propagation of seed and also testing some other fodder crops in a small plot.
....	6 0 0					
12 22 8	4 0 0	594 0 0	39 5 9	74 4 0	34 14 3	Profit.
24 0 0	1 0 0					
6 0 0	4 0 0	240 0 0	34 3 0	30 0 0	4 3 0	Loss. About 8 bighas have been washed away by the heavy shower of September. This portion is lying near the canal. The loss is due to this.
24 0 0	1 0 0					
171 30 0	0 8 0	271 15 0	63 15 0	85 14 0	21 15 0	Profit.
248 20 0	0 8 0	621 4 9	34 11 3	124 4 3	89 9 0	Do.
....	....	4 12 6	5 9 0	9 9 0	4 0 0	Do.
165 14 7	0 8 0	440 15 6	75 0 0	82 10 9	7 10 9	Do.
270 15 13	0 6 0	608 6 3	42 13 0	101 6 9	58 9 6	Do.
153 2 1	0 12 0	480 6 0	30 6 9	51 7 0	21 0 3	Do.
32 5 11	1 4 0					
66 18 0	0 12 0	220 7 6	24 15 0	81 0 9	56 1 9	Do.
24 38 12	1 4 0					
16 35 0	0 12 0	113 1 0	39 7 9	54 15 3	15 7 6	Do.
33 33 12	1 4 0					

TABLE

Plot Nos.	Area in the map in bighas.	Area cropped.	Name of crop.	Cost of cultivation.	Actual outturn.	
	Rabi—concld.					
	B. c. ch.	B. c. ch.		Rs. A. P.		Mds. sr. ch.
11	12 0 0	12 0 0	Peas	137 14 9	....	408 5 0
25	10 5 0	10 5 0	Oats	98 5 0	Green fodder ..	15 10 0
					Hay	211 10 0
	90 5 0	65 10 0				
	Other area (kharif).					
6	18 0 0	6 0 0	Sundhia *juar* ..	144 7 6	....	126 38 0
5	18 0 0	2 10 0	Ditto ..	69 0 3	....	
7	20 5 0	16 15 0	Cowpea ..	145 2 9	....	
11	12 0 0	8 0 0	Maize	129 1 6	....	12 10 0
12	6 0 0	4 0 0	Maize and Sundhia *juar.*	77 13 9	....	....
12	1 10 0	1 10 0	Guinea grass ..	30 3 3	....	....
12	2 0 0	2 0 0	*Indrasail* paddy seed bed.	22 4 0		
16	20 0 0	20 0 0	Cowpea, *bhuru*, sundhia *juar* resown.	302 14 3	Cowpea *bhuru* ..	79 35 0
					Sundhia *juar* ..	64 20 0
20	15 0 0	15 0 0	Maize	301 2 3	Green fodder ..	1,048 3 0
					Grain	2 20 0
22	2 0 0	2 0 0	*Mashyem kalai* ..	12 1 0	Grazed ..	....
26	....	39 10 0	*Juar* and cowpea ..	387 7 3	....	906 7 0
27	2 0 0	2 0 0	*Indrasail* paddy seed bed.	34 11 0		
42	3 15 0	0 15 0	*Bhuru*	28 9 6	....	....
43	7 9 0	7 0 0	*Mashyem kalai* ..	28 3 9	....	....
47	19 0 0	9 15 0	Cowpea and *bhuru*	194 15 0	*Bhuru*	151 19 0
25	1 10 0	1 10 0	Guinea grass ..	13 4 3	Cowpea (grazed) ..	48 34 0
	Rabi.					
3	21 0 0	21 0 0	*Khesary* ..	13 8 0	Grazed ..	....
15	28 5 0	28 5 0	Ditto ..	17 12 0	Ditto ..	....
16	20 0 0	11 10 0	Oats	107 12 3	Green fodder ..	70 0 0
					Hay	41 0 0
22	2 0 0	2 0 0	Japanese millet ..	17 10 0	Grazed ..	....
27	16 0 0	16 0 0	Peas	127 8 9	Grazed ..	....
47	19 0 0	14 0 0	Oats	116 2 9	Green fodder ..	81 0 0
					Hay	125 0 0

No. VI—*contd.*

Outturn per acre.	Rate per maund.	Actual value.	Cost of cultivation per acre.	Value per acre.	Profit or loss per acre.	Remarks.
Mds. srs. ch.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	
102 1 4	0 12 0	306 1 6	34 7 9	76 8 3	42 0 6	Profit.
4 18 8	0 12 0	275 13 0	16 12 0	90 9 9	73 13 9	Do.
61 32 12	1 4 0					
63 19 0	0 6 0	31 12 4	72 3 9	23 12 9	48 7 0	Loss.
....	....	....	....	....	....	
....	....	....	....	....	....	
4 23 12	0 8 0	6 2 0	48 8 3	2 4 9	46 3 6	Loss. The whole plot was under water. The crop was grazed by cattle.
....	....	....	....	....	....	Crop failed due to heavy shower of September and the crop was grazed by cattle.
....	....	22 4 0	....	....	....	Ditto.
....	0 6 0	54 1 9	....	....	....	Loss. Due to heavy shower after sowing.
....	0 6 0					
209 24 9	0 8 0	544 1 6	60 3 6	108 13 0	48 9 6	Profit.
0 20 0	8 0 0					
....	....	....	....	....	....	Grazed.
68 32 14	0 6 0	339 13 0	29 7 0	25 13 3	3 9 9	Loss.
		60 3 9			51 13 0	Profit.
....	....	....	....	....	....	Grazed.
....	....	....	....	....	....	
....	0 6 0	56 13 0	....	....	....	Loss.
97 18 0	1 0 0	48 13 0	26 8 6	97 11 0	71 2 6	Profit.
....	....	....	....	....	....	Grazed.
....	....	....	....	..	....	Do.
18 10 2	0 12 0	103 12 0	....	....	....	Loss. The soil is more or less sandy, hence the outturn is poor.
10 27 8	1 4 0					
....	....	....	....	....	....	Grazed.
....	....	....	....	....	....	Do.
17 15 2	0 12 0	217 0 0	....	....	....	Rs. 100-13-3 profit from the area.
26 31 6	1 4 0					

TABLE

Plot Nos.	Area in the map in bighas.	Area cropped.	Name of crop.	Cost of cultivation.	Actual outturn.	
	Robi—concld.					
	B. c. ch.	B. c. ch.		Rs. A. P.		Mds. srs. ch.
26	41 15 0	29 0 0	Oats	298 6 3	....	....
7	20 5 0	17 5 0	Japanese millet and oats.	222 14 3	....	....
46	5 0 0	4 0 0	Oats	45 6 6	....	
42	3 15 0	3 10 0	Lentils ..	32 1 9	Grain	2 5 0
12	8 0 0	5 0 0	Oats	64 14 6	....	....
47	20 0 0	17 5 0	Oats	146 9 3	....	....
	205 0 0	168 15 0				

No. VI—*concld.*

Outturn per acre.	Rate per maund.	Actual value.	Cost of cultivation per acre.	Value per acre.	Profit or loss per acre.	Remarks.
Mds. srs. ch.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	
....	....	....	....	....	....	Five bighas grazed. Expected outturn from 24 bighas—hay 150 mds.
....	....	....	....	....	....	Japanese millets have been grazed. Oats not yet ready; to be grazed.
....	....	....	....	....	....	Grazed.
1 32 13	5 0 0	10 10 0	27 7 0	9 1 6	18 6 0	Loss. About half of the plot is sandy. The outturn has been received from 1¼ bighas
....	....	....	....	....	....	To be grazed.
....	....	....	....	....	....	Ditto.

Financial statement showing the results of agriculture in the Rangpur Cattle Farm for the year ending 31st March 1926.

Debit.

Heads of debits.	Amount of each sub-heads	Amount of each head.
	Rs. A. P.	Rs. A. P.
1. Sale proceeds in hand at the commencement of the year, 1st April 1925	Nil	Nil.
2. (*a*) Value of last year's farm produce in stock at the commencement of the year 1925-26.	790 4 0	....
(*b*) Value of purchased store and other raw materials of the previous year in stock at the commencement of the year 1925-26 ..	266 11 0	1,056 15 0
3. Amount of outstanding bills payable by the farm at the end of the year	....	Nil.
4. Amount of unrealised sale-proceeds due to the farm at the commencement of the year	1,933 1 9	1,933 1 9
5. Value of tools and plants and other agricultural implements in hand at the commencement of the year	19,422 0 0	19,422 0 0
6. Amount drawn from the treasury during the year—		
(*a*) Pay and allowances of the staff ..	7,770 9 0	
(*b*) Wages of labourers ..	7,497 3 3	
(*c*) Other contingencies—		
Purchase and feed of cattle	13,857 15 3	
Seeds, manures and implements	1,160 4 0	
Reclamation	496 12 9	
Petty construction and repairs ..	1,320 2 6	
Furniture	25 0 0	
Cost of medical aid ..	45 1 0	
Miscellaneous ..	1,283 2 0	33,456 1 9
(*d*) Cost of stores, seeds, farm produce, etc., received from other farms within or outside the province by adjustment or book transfer—		
By book transfer	36 0 0	
By stock transfer	234 10 9	270 10 0
Total ..		56,138 13 3

Credit.

Heads of credits.	Amount of each sub-head.	Amount of each head.
	Rs. A. P.	Rs. A. P.
1. Sale-proceeds in hand at the end of the year 1925-26 ..		37 9 0
2. (*a*) Value of farm produce in stock for sale and farm's use..	400 0 0	
(*b*) Value of the purchased store and other raw materials in stock at the end of the year 1925-26	706 4 6	1,106 4 0
3. Amount of outstanding bills payable by the farm at the commencement of the year ..	....	Nil.
4. Amount of unrealised sale-proceeds due to the farm at the end of the year	....	255 12 9
5. Value of tools and plants and other agricultural implements in hand at the end of the year ..	....	14,522 8 0
6. Amount paid in the treasury during the year 1925-26—		
(*a*) Amount credited in cash into the treasury ..	10,905 10 6	
(*b*) Value of store, seeds, etc., supplied to other farms within or outside the province by adjustment	1,060 12 0	12,566 6 6
		23,488 8 9
Excess of Expenditure over receipts, *ie.*, loss		27,650 4 6
Total ..		56,138 13 3

APPENDIX XXXII.

Annual Report of the Rangpur Demonstration Farm for the year 1925-26.

Introduction and soil.—The farm with an area of 19·16 acres is situated in the heart of the town. The area under cultivation is 16 acres, and the rest being under roads, drains, buildings, etc. The soil is rich sandy loam with sandy sub-soil.

Object.—The object of the farm is to grow improved varieties of seeds for propagation and demonstration in the district and to carry out experiments suggested by the experts and the Deputy Director of Agriculture.

Rainfall and character of the season.—The rainfall during the year under report was as follows:—

Month and year.	Actual rainfall.		Normal rainfall.	
	Amount of rainfall.	Number of days.	Amount of rainfall.	Number of days.
April 1925 ..	12·70	16	3·01	4·3
May ,, ..	11·74	12	10·66	11·5
June ,, ..	13·37	21	18·00	15·7
July ,, ..	8·39	24	15·89	15·0
August ,, ..	22·51	22	12·80	15·7
September ,, ..	16·96	19	14·24	13·3
October ,, ..	·01	1	4·87	4·4
November ,, ..	....	....	0·12	0·2
December ,, ..	....	....	0·05	0·2
January 1926 ..	....	....	0·50	0·9
February ,, ..	·01	1	0·50	1·2
March ,, ..	1·31	8	1·25	1·8
	87·00	124	81·93	82·2

Weather conditions were most unfavourable for the jute crop, which could not be weeded owing to constant rain. Transplanting of *aman* paddy was done timely, but excessive showers of rainfall damaged the low lying area. The cultivation of *rabi* crop was rather late on account of excessive rain during August and September.

The nature of the various types of work conducted on the farm during the year under report is as follows:—

Experiments.—

(*a*) *Aus* paddy—*Kataktara* versus local *chapalo* and *sonamail*.
(*b*) Jute—D. 154 Fanduk, R. 85 and local.
(*c*) *Aus* paddy with nitrate of soda and cowdung.
(*d*) Chlorosis experiment.
(*e*) Jute for seeds.
(*f*) Mulberry.

Seed propagation.—

(1) *Kataktara aus* paddy.
(2) *Indrasail aman* paddy.
(3) Yellow *tanna* sugarcane
(4) C. O. 213 sugarcane.
(5) D. 154 jute.

Commercial basis.—

(1) *Indrasail* paddy.
(2) Jute for fibre.
(3) *Tanna* sugarcane.

Fodder crops.—

Juar.
Oats and peas.
Khesari.

Miscellaneous crop.—

Lentils.
Gram.
Local potato.
Darjeeling potato.
Wheat (*Gangajali* variety).
Jute for fibre.
Pine-apple.

Experiment.—(*a*) *Aus* paddy (*Oryza Sativa*).—An experiment was tried with *Kataktara aus* against two local varieties with the following result:—

Variety.	Area in acre.	Actual outturn.	Outturn per acre.
		Mds. srs. chs.	Mds. srs. chs.
Kataktara	1/20th	1 4 0	22 0 0
Chapalo	,,	0 32 0	16 0 0
Kataktara	,,	1 6 4	23 5 0
Sonamail	,,	1 17 0	28 20 0
Kataktara	,,	1 8 8	24 10 0
Chapalo	,,	0 38 0	19 0 0
Kataktara	,,	1 8 12	24 15 0
Sonamail	,,	1 4 0	22 0 0

This shows the superiority of *Kataktara aus*, except of one plot under *Sonamail*, which may be accidental. In previous years *Sonamail* was second best of the *aus* paddies experimented with.

(*b*) *Jute.*—Government strains of jute were tested against a race reported to produce a fine quality of jute, *i.e.*, Fanduk. The objects were to determine the influence of local conditions on fibre as well as the comparative yielding capacities of each variety. The results of the experiment of jute fibre are

given below, but the figures disagree with those of former years, and are probably not worth much as the crop was damaged by excessive rain:—

Variety.	Area in acre.	Outturn of green plant per plot.	Actual outturn of fibre.	Outturn per acre.
		Mds. srs. chs.	Mds. srs. chs.	Mds. srs. chs.
D 154	1/20th	13 10 0	0 37 0	18 20 0
Fanduk	,,	9 32 8	0 22 0	11 0 0
R 85	,,	17 10 0	0 32 0	16 0 0
Local	,,	9 15 8	0 20 0	10 0 0
D 154	,,	9 39 0	0 18 0	9 0 0
Fanduk	,,	8 5 0	0 14 8	7 10 0
Local	,,	11 35 0	0 25 0	12 20 0
R. 85	,,	11 22 0	0 23 0	11 20 0

NOTE.—The crop suffered much on account of constant rainfall.

(*c*) *Aus paddy with nitrate of soda and cowdung.*—An experiment was tried with nitrate of soda and cowdung on *Kataktara* paddy at the instance of the Director of Agriculture, Bengal, but gave no results of value owing to unsuitable condition. The experiment will be repeated.

(*d*) *Chlorosis experiment.*—The chlorosis experiment was done at the suggestion of the Fibre Expert, Government of Bengal. There were four varieties of jute, viz., D. 154, R. 85, K. B., Dhaleswar. Seeds were sown in rows nine inches apart with plants, two inches apart in the row. These plots were kept for seeds. The total chlorotic jute plants are given below.

Following plants were weeded:—

Date.	D 154.	R 85.	K. B.	Dhalweswar.
7-7-25	Chlorotic 24 ..	Chlorotic 6 ..	Chlorotic 2 ..	Plants are not taken out.
	Non-chlorotic 730	Non-chlorotic 401	Non-chlorotic 806	
19-8-25	Chlorotic 6	Chlorotic 12 ..	Chlorotic 1 ..	Chlorotic 531.
	Non-chlorotic 197	Non-chlorotic 141	Non-chlorotic 418	Non-chlorotic 12
	In the field—519	482	480	320

Following plants were left in the field:—

7-7-25	Non-chlorotic 685	Non-chlorotic 566	Non-chlorotic 894	Non-chlorotic 46.
	Chlorotic 20 ..	Chlorotic 25 ..	Chlorotic 2 ..	Chlorotic 786.
7-8-25	Non-chlorotic 690	Non-chlorotic 591	Non-chlorotic 896	Non-chlorotic 48.
	Chlorotic 15 ..	Chlorotic 22 ..	Chlorotic 1 ..	Chlorotic 788.
16-8-25	Chlorotic 17 ..	Chlorotic 22 ..	Chlorotic 2 ..	Non-chlorotic 27. The rest are Chlorotic plants.

(*e*) *Jute for seeds for future experiment.*—The experiment was tried to ascertain whether fibre deteriorates, if the crop be grown from seed year after year in the same place. In this year four plots, each measuring 4 yards × 3 yards, were sown with D. 154, R. 85, Fanduk and local. Owing to excessive rainfall, these plants did not grow well. The following quantities of seeds were received: D. 154-10 chs., R. 85—1 sr., Fanduk—11 ch., and Local 15—ch.

This shows the superiority of R. 85 with local as second best.

(*f*) *Mulberry.*—According to the instructions from the Assistant Director of Agriculture, Bengal, the cultivation of mulberry was sanctioned.

Seed propagation.—*Kataktara aus* paddy was grown on 3·05 acres. Fifty-two maunds 34 seers of seeds were obtained, giving an average of over 17 maunds per acre.

Yellow tanna was grown on ·33 acre. 4 mds. 24 srs. 9 ch. *gur*; 1 md. 4 srs. sugar and 1 md. 10 srs. 10 ch. small cakes of gur and 5,800 setts were obtained. Two thousand setts were supplied to the Secretary, Agricultural Association, Rangpur, and the rest were planted in the farm. The outturn has been very poor on account of accumulation of water in the field. This cause has operated at other farms too.

C. O. 213.—C. O. 213 variety of sugarcane was planted in four rows last year. Cuttings were made from the whole plants for plantation in the farm. Three thousand six hundred setts were made during the year under report for plantation. These have been planted for 1926-27 crop, and by th time of writing this report, all show a very good germination.

D. 154 jute seeds.—D. 154 was sown on 1·45 acres. Seven mds. 7srs. 12ch. of seeds were obtained in the above area.

Commercial basis.—A certain portion of land was cultivated on commerial basis to show the public that agriculture as a profession can be taken up on business lines.

Aman paddy.—*Indrasail* paddy was grown on 4·30 acres of land. The cost of cultivation, etc., is given below:—

No. of plot.	Area of plot.		Yield of crop.		Value of produce.			Cost of production.		Profit or loss per acre.
			Per plot.	Per acre.	Per plot.	Per acre.		Per plot	Per acre.	
			Mds. srs. chs.	Mds. srs. chs.	Rs. A. P.	Rs. A. P.		Rs. A. P.	Rs. A. P.	
Block	1·60	Grain ..	33 8 0	20 30 0	149 6 3	93 6 0	Seeds ..	8 10 3		
							Manure ..	Nil		
		Straw ..	48 0 0	30 0 0	24 0 0	15 0 0	Tillage, etc.	44 8 3		
					173 6 3	108 6 0				
							Harvesting, etc.	9 12 0		
Block G	1·60	Grain ..	31 26 0	19 31 4	142 6 9	*89 0 0	Threshing ..	12 2 9		
								75 1 3	46 14 0	Profit Rs. 61 8 0
		Straw ..	45 0 0	28 5 0	22 8 0	14 1 0				
					164 14 9	103 1 0				
							*Seeds ..	8 10 3		
							Tillage ..	48 12 0		
							Harvesting ..	10 8 0		
							Threshing ..	3 14 3		
								71 12 6	44 13 6	Profit Rs. 58 3 6
Block H	1·0	Grain ..	16 39 0	16 39 0	76 6 3	76 6 3	Seeds ..	5 14 3		
							Tillage ..	18 9 6		
							Harvesting, etc.	15 3 9		
								39 11 6	....	Profit Rs. 49 2 9
					88 14 3	88 14 3				

(*b*) *Jute for fibre.*—This was grown on ·30 acres of land. The outturn was not satisfactory owing to excessive rainfall. The profit and loss is given below.

The valuation of fibre is taken at market rates at the time of harvesting. But price of jute fibre fluctuates considerably—

No. of plot.	Area of plot.		Yield of crop.		Value of produce.			Cost of production.		Profit or loss per acre.
			Per plot.	Per acre.	Per plot.	Per acre.		Per plot.	Per acre.	
			Mds. srs.	Mds. srs.	Rs. A. P.	Rs. A. P		Rs. A. P.	Rs. A. P.	
Block B 9-II	·30	Jute for fibre	5 10	17 20	123 11 3	412 5 6	Seeds ..	1 6 6		
							Manure ..	2 0 0		
							Tillage ..	27 12 0		
							Harvesting	12 9 6		
								43 12 0	145 15 0	Profit Rs. 266-6-6

(*c*) *Sugarcane.*—Yellow *tanna* was grown on ·33 acres of land with the result as under—

No. of plot.	Area of plot.		Yield of crop.		Value of produce.			Cost of production.		Profit or loss per acre.
			Per plot.	Per acre.	Per plot.	Per acre.		Per plot.	Per acre.	
			Md. sr. chs.	Md. sr. chs.	Rs. A. P.	Rs. A. P.		Rs A. P.	Rs. A. P.	
Block J	·33	*Gur* ..	5 31 14	17 15 10	55 1 3	165 3 9	Seeds ..	19 10 0		
							Manure ..	7 4 0		
			Rs. 6,476	Rs. 19,428	32 6 0	97 2 0	Tillage, etc.	52 15 0		
							Harvesting etc.	19 14 6		
					87 7 3	262 5 9				
		Sugarcane ..	....	....	1 14 0					
					89 5 3			99 11 6	299 2 6	Loss Rs. 36 12 9

NOTE.—This crop did not grow well due to bad weather condition and accumulation of water in the field.

Fodder crops. -

Area in acre.	Name of crop.	Outturn.	Remarks.
1·46	*Juar*	100 mds.	Green fodder was fed to cattle.
1·66	Oats and peas ..	....	Ditto.
2·60	Khesari	....	Ditto.

Miscellaneous crops.—

Area in acres.	Name of crop.	Outturn.	Remarks.
·80	Lentils	....	Ploughed down on account of excessive weeds.
·20	Gram	....	The crop totally failed as the pods were empty.
·20	Darjeeling potato ..	Mds. 11·30	The outturn is very poor on account of severe attack of caterpillar and rainfall during the time of sowing.
·20	Country potato ..	„ 7·20	Ditto.
1·06	*Gangajali* wheat ..	....	Not yet threshed.
·10	Pine-apples ..	64	
1·30	Jute for fibre ..	Mds. 13·26	Out of which, an area of 1·0 acre is low land. The outturn was not satisfactory on account of excessive rainfall.
·80	Cowpea	....	Grown as green manure.

Area under different crops in the farm during the year under report—

Area in acres.	Name of crop.	Area in acres.	Name of crop.
·40	Paddy seed bed	·20	Potato.
1·06	*Aus* paddy	1·06	Wheat.
2·0	Jute for fibre	·80	Lentils.
1·46	Juar for fodder ..	1·66	Oats and peas.
·10	Pine-apples	·20	Gram.
·66	Sugarcane		
·80	Cowpea		
6·43	*Aman* paddy		
·16	Mulberry		
1·46	Jute for seeds		

Seed distribution.—The following quantities of pure seeds were disposed of from the farm.

Kataktara	.. ..	11 mds. 13 srs. seeds.
Indrosail paddy	.. ..	154 mds. 30 srs.
Jute seeds	.. ..	6 mds. 14 srs. 8 chs.
Sugarcane	.. ..	2,000.

Training.—One man was taken in for training in this farm at usual rates of wages.

Reclamation.—Out of 1·4 acres of low land, ·49 has been brought under cultivation this year. The area was under *Indrasail* paddy. The rest 1·0 acre was reclaimed last year and was under K. B. jute.

Cattle.—There were five pairs of bullocks in the farm. In the later part of the year under report, two old pairs were sold, which were replaced by two new pairs from the cattle farm.

Stud bull.—The half Hissar stud bull of the farm which was bred at the Rangpur Cattle Farm was of great use to the public. Thirty-one cows were served by the bull during the year under report, and no fees were charged. It was found that if a fee is charged for service, the public do not appreciate the value of good breeding.

Establishment.—Babu Digendra Nath Banerjee was in charge of the farm throughout the year and was assisted by the Overseer, Babu Indu Bhusan Sen Gupta.

Visits.—The Director of Agriculture, Bengal, the Assistant Director of Agriculture, Bengal, the Agricultural Chemist to the Government of Bengal and the Commissioner of the Rajshahi Division visited the farm. The Deputy Director of Agriculture, Northern Circle, frequently visited the farm during the year.

A. R. MALLIK,

Deputy Director of Agriculture,
Northern Circle.

Financial statement of the Demonstration Farm, Rangpur, for the year 1925-26.

Debits.

Heads of debits.	Amount of each sub-head.	Amount of each head.
	Rs. A. P.	Rs. A. P.
1. Sale-proceeds in hand at the commencement of the year ..	8 2 3	8 2 3
2. (*a*) Value of last year's farm produce in stock after commencement of the year ..	814 14 0	....
(*b*) Value of purchased store and other raw materials of the previous year in stock at the commencement of the year ..	436 12 0	1,251 10 0
3. Amount of outstanding bills payable by the farm at the end of the year ..	....	....
4. Amount of unrealised sale-proceeds due to the farm at the commencement of the year ..	....	157 15 6
5. Value of tools and plants and other agricultural implements in hand at the commencement of the year	....	1,342 8 6
6. Amount drawn from the treasury during the year—		
i) Pay of the staff ..	2,410 14 0	....
(*ii*) Purchase of seeds, manures and implements ..	279 8 6	....
(*iii*) Purchase and feed of cattle	300 1 6	....
(*iv*) Rent and taxes ..	39 10 0	....
(*v*) Petty repairs	149 8 9	....
(*vi*) Office expenses and miscellaneous	133 6 6	....
(*vii*) Wages of labourers ..	1,533 8 9	....
(*viii*) Railway and steamer freight ..	11 15 0	....
Bills adjusted by stock transfer. ..	320 0 0	5,178 9 0
		7,935 13 3
Deduct :—		
(*a*) Value of articles written off .	203 0 0	....
(*b*) Petty construction and repairs ..	149 8 9	352 8 9
		7,586 4 6

Credits.

Heads of credits.	Amount of each sub-head.	Amount of each head.
	Rs. A. P.	Rs. A. P.
1. Sale-proceeds in hand at the end of the year ..	....	....
2. (*a*) Value of farm produce in stock for sale and farm use ..	653 14 3	
(*b*) Value of the purchased store and other raw materials in stock at the end of the year ..	476 2 3	1,130 0 6
3. Amount of unrealised sale-proceeds due to the farm at the end of the year ..	168 7 0	168 7 0
4. Value of tools, plants and other agricultural implements in hand at the end of the year ..	1,520 11 0	1,520 11 0
5. Amount paid in the treasury during the year—		
(*a*) Amount credited in cash in the treasury ..	1,484 2 9	....
(*b*) Value of store, seeds, etc., supplied to other farm seed, depot within or outside the province by adjustment ..	289 10 0	1,773 12 9
		4,601 15 3
Excess expenditure		2,984 5 3
		7,586 4 6

Loss is due to unfavourable weather condition and failure of *rabi* crops.

APPENDIX XXXIII.

Annual Report of the Government Tobacco Farm (Burirhat), Rangpur, for the year 1925-26.

Introduction.—The farm is situated at a distance of 5 miles north of Rangpur town on the borders of a large tobacco growing belt in the Rangpur district and is 52 acres in extent. It is divided into 5 blocks. Of this, 28 acres are under cultivation and 24 acres are occupied by roads, buildings, cooly sheds, curing sheds, grazing and tank.

Soil.—The soil is a sandy loam with a sub-soil of almost pure sand which occurs at a depth of from 1 to 2 feet from the surface and is peculiarly suited to tobacco, but always requires heavy manuring.

Season.—The season was on the whole unfavourable. The heavy downpours during the month of August and September destroyed most of the seed-beds and spoiled the tilth of the soil of the tobacco lands that were under preparation by rendering them too moist for early transplanting. Excepting some high lying lands or plots, most of the blocks of the farm were under water as we had more than 45 inches of rainfall in August and 26 inches during the month of September. Transplanting was not completed till the Xmas week. This was partly due to the scarcity of labourers. The subsequent weather during the growing period, *i.e.*, in January was on the whole favourable as there was a couple of light showers during the month.

The following table gives the monthly rainfall from April 1925 to March 1926 inclusive together with the approximate normal rainfall for those months:—

Month and year.	Actual.		Normal.	
	Rainfall in inches.	Number of rainy days.	Rainfall in inches.	Number of rainy days.
April 1925	20·06	17·0	3·01	4·3
May ,, ...	13·76	15·0	10·66	11·5
June ,, ...	14·82	21·0	18·00	15·0
July ,, ...	9·81	21·0	15·89	15·0
August ,, ...	45·54	25·0	12·90	13·7
September ,, ...	26·51	22·0	14·24	13·3
October ,, ...	1·82	4·0	4·87	4·4
November ,, ...	0·82	2·0	0·12	0·2
December ,, ...	Nil	Nil	0·05	0·2
January 1926	·64	2·0	0·05	0·9
February ,, ...	Nil	Nil	0·54	1·2
March ,, ...	2·55	Nil	1·25	1·8
Total ..	136·33	129·0	81·93	81·5

Operation during the year under report.—

	Acres.
1. *Kharif*—	
Crops—	
(*a*) Jute	1·45
(*b*) Sunn hemp for green manuring	6·2
(*c*) Dhaincha for green manuring	8
2. *Rabi*—	
(*a*) Tobacco	7·2

Of this tobacco crop part was manurial, part non-experimental and part varietal, including pure line selection.

Manufacture of cigars.—This has been transferred to the Dacca Farm under the direct supervision of the Agricultural Chemist to the Government of Bengal during the month of April 1925, and cigar-making is being carried on there regularly. Details on the manufacture of cigars will be found in the report of the Agricultural Chemist.

Experiments.—(1) Improvement of Sumatra tobacco for cigar wrapper.

(2) Variety trial of different filler varieties on the farm.

(3) Manurial requirements of different varieties of tobacco.

(4) Trial of different varieties of new cigar tobaccos.

Jute.—There were 1·45 acres under jute—1 acre being for fibre and the rest for seed. The total yield of jute seed was 19 seers from ·45 acres. Yield of fibre from 1 acre was 5 maunds 32 seers.

Juar.—*Juar* as fodder for the farm cattle was grown on 6 acres of land. Eight hundred and sixty maunds were supplied to cattle farm and demonstration farm, Rangpur, keeping sufficient for the farm cattle up to January 1926.

Dhaincha and sunn hemp.—For improving the soil green manuring with sunn hemp and *Dhaincha* were carried out on an area of 14·2 acres. The heavy rainfall of August allowed *Dhaincha* and sunn hemp to be easily ploughed in.

Tobacco—*Bhengi.*—This is the heaviest yielder among the local varieties.

The well known Burman torch cheroots are made out of it, and this is why it fetches the highest price among local tobaccoes. The seedlings being very late transplanted, the crop has proved almost a failure.

Sumatra.—The tobacco grown for cigar wrapper was Sumatra, and was put on an area of 2 acres. The reputation of Sumatra tobacco leaf from the farm grown selected seeds as a cigar wrapper is well established. Unfortunately owing to the very late transplanting the crop did not do very well, and consequently a very poor return is expected. The yields will be supplied later on.

Filler tobaccos.—A better filler is wanted to establish cigar making a successful enterprise. *Pennsylvania*, Manilla and Burmese Havana have been tested for some years in the farm. This year however *Pennsylvania* only was put in 1 acre. The other varieties are being tried at different district farms of the province, where they might thrive well. The area put under *Pennsylvania* was ultimately ploughed down as the crop practically failed. The seedlings were planted very late in the field, and it was evident that a very late transplanted crop of tobacco would not succeed.

Cigar tobaccoes.—The following varieties of cigar tobaccoes, seeds of which were brought from different parts of the world were tried in the farm this year, but owing to the very late transplantation also to excessive rains and to poor cultivation, the crop of tobacco was not a success, and hence no definite idea about these new varieties of tobacco could be achieved this year. However, endeavours are being made to preserve seeds of these varieties for next year's sowing.

Distribution of seeds.—The selection of the best tobacco plants for seed by bagging is being continued with good results. The demand for the selected superior seeds of different varieties of tobacco has greatly increased. Seeds of

tobaccos to the value of Rs. 106-8-6 were sold. A table showing the distribution of seeds during the year is given below:—

	Name of variety.	Quantity in tola.
1.	Sumatra tobacco seeds	16¼
2.	*Bhengi* ,, ,, ...	175⅜
3.	*Pennsylvania* ,, ,, ...	15⅛
4.	*Motihari* ,, ,, ...	82
5.	Naokhol ,, ,, ...	22½
6.	Manilla I ,, ,, ...	5
7.	Ohio ,, ,, ...	7
8.	White barley ,, ,, ...	3
9	Orinoco ,, ,, ...	3½
10.	C. Havana ,, ,, ...	3¼
11.	B. Havana ,, ,, ...	7¼
12.	Yellow Prior ,, ,, ...	1
13.	*Ayasaluk* ,, ,, ...	2½
14.	Cavala ,, ,, ...	1¼
15.	Thotnopatty ,, ,, ...	5½
16.	Manilla II ,, ,, ...	28½
17.	Mauritius ,, ,, ...	1½

Seedlings of different varieties of tobaccoes were sold to the neighbouring cultivators of the locality and to Dacca Farm.

Cattle.—The total strength is 12 bullocks, including the pair recently purchased from the cattle farm. No epidemic disease broke out amongst the farm cattle. Two stud bulls which were sent to this farm from the cattle farm have been taken back.

Farm labourers.—As the farm is entirely and solely dependent on outside labourers, the work could not be carried out satisfactorily. Whenever labour is required at the farm for some special work, the cultivators also for the same reason require them, and the result is that there is inevitably a dearth of labour. The main labouring class of the district is Beharis. They are very uncertain because they prefer to work for the local cultivators as they not only get higher wages but also the midday meals from them. Moreover these Behari emigrants are never steady, and are apt to leave for their country at any moment, their bringing about a sad collapse in experimental work. This is a problem to be solved.

Implements.—No new implements were tried in the year under report except the Midwest Utiliter Tractor, one received from Chinsura Farm. The Tractor has however become unserviceable for want of a magnete. It has been proposed to replace the magnete next year and to run it for irrigation purposes as well as ploughing.

Medical aid.—The farm dispensary was in charge of a senior Sub-Assistant Surgeon.

Visits.—The farm being situated far away from the town in an out of the way locality, visits from the public were very few and far between. Mr. Shaw, Imperial Botanist, the Subdivisional Officer, Rangpur, visited the farm. The Agricultural Chemist, the Deputy Director of Agriculture, Northern Circle, and the Superintendent of Agriculture, on special duty, inspected the farm on several occasions in the course of their tours.

Management.—The farm was managed by the Superintendent, assisted by one Overseer, one curer and a clerk. Babu Amrita Lal Mukherjee held charge of the farm as the Superintendent up to the 15th January 1926, since then Babu Gomaj Behari Bose is in charge of the farm.

M. CARBERY,

Agricultural Chemist to the Government of Bengal.

Financial statement of the Government Tobacco Farm, Rangpur, for the year ending the 31st March 1926.

Debits.

Heads of debits.	Amount of each sub-head.	Amount of each head.
	Rs. A. P.	Rs. A. P.
1. Sale-proceeds in hand at the commencement of the year, viz., 1st April 1925.	Nil	Nil
2. (*a*) Value of last year's Farm produce in store at the commencement of the year.	3,897 10 9	
(*b*) Value of purchased stores and other raw materials of the previous year in store at the commencement of the year.	283 14 0	
	4,181 8 9	
Less value written off	474 5 9	
		3,707 3 0
3. Amount of outstanding bills payable by the Farm at the end of the year.	Nil	Nil
4. Amount of the unrealised sale-proceeds due to the Farm at the commencement of year.	467 0 0	467 0 0
5. Value of tools and plant and other agricultural implements in hand at the commencement of the year.	4,940 9 6	4,940 9 6
6. Amount drawn from the Treasury during the year—		
(*a*) Allowance of the staff	482 2 0	
(*b*) Pay of staff	3,129 11 0	
(*c*) Contingencies—		
(1) Wages of labourers	2,127 11 6	
(2) Feed of cattle	412 2 9	
(3) Seeds, implements	640 0 9	
(4) Petty construction and repairs ..	749 0 9	
(5) Reclamation	196 14 6	
(6) Cooly and cart	88 0 9	
(7) Office expenses and miscellaneous ..	398 6 9	
(*d*) Cost of stores, seed, Farm produce, etc., received from other Farms by adjustment of book transfer	311 6 0	
		8,535 8 9
		17,650 5 3
Deduct on account of capital expenditure—		
(1) Petty construction	....	749 0 9
Net expenditure excess of receipts over expenditure, *i.e.*, profits.	....	Nil
Grand Total ..	....	16,901 4 6

Credits.

Heads of credits.	Amount of each sub-head.	Amount of each head.
	Rs. A. P.	Rs. A. P.
1. Sale-proceeds in hand at the end of the year ..	Nil	Nil
2. Value of Farm produce—		
(*a*) In stock for sale and Farm's use ..	1,968 10 9	
Less value written off	89 13 0	
	1,878 13 9	
(*b*) Value of the purchased stores and other raw materials in stock at the end of the year.	103 0 6	
		1,981 14 3
3. Amount of outstanding bills payable by the Farm at the commencement of the year.	Nil	Nil
4. Amount of unrealised sale-proceeds due to the Farm at the end of the year.	486 6 3	486 6 3
5. Value of tools and plant and other agricultural implements in hand at the end of the year.	4,996 13 0	
Less value written off	26 0 0	
		4,970 13 0
6. Amount paid in the Treasury during the year—		
(*a*) Amount credited in cash into the Treasury	715 15 3	
(*b*) Value of stores seed, etc., supplied to other Farms by adjustments.	1,477 14 0	
		2,193 13 3
		9,632 14 9
Excess of expenditure over receipts, *i.e.*, loss ..	....	7,268 5 9
Grand Total ..	....	16,901 4 6

Explanation for the loss.—The reason for the excess of expenditure over receipt is due to almost failure of the crop and also for the reason that the value of the crop of this year has remained unaccounted for owing to the late harvesting and not been considered in the statement.

APPENDIX XXXIV.

Annual Report of the Rajshahi Farm for the year 1925-26.

Introduction.—The farm with an area of 63 acres is situated to the north of the Rajshahi town. The area under cultivation this year is 48·25 acres—the rest being under roads, drains, buildings, tanks and pastures.

Objects.—The object of the farm is primarily—(1) to carry out field experiments in connection with investigations carried on by the Experts and Deputy Director of Agriculture, Northern Circle, secondly (2) to propagate pure seeds of recommended varieties for distribution, specially *tanna* sugarcane and *Indrasail* paddy, and (3) to cultivate a certain area of the farm as a demonstration to cultivators, and to the general public interested in agriculture, that good farming is an economic proposition. The farm is also a centre for the demonstration of the superiority of the departmental crops.

Staff.—Babu Mohini Mohan Ghosh was in charge of the farm during the year. He was assisted by one Assistant Superintendent, one Overseer and one clerk.

Improvements.—Great difficulties have been experienced during the past years in retting jute grown on the farm. To solve this difficulty one shallow tank has been excavated in block A during the current year at a cost of Rs. 275.

Soil.—The soil of the farm has been analysed by the Agricultural Chemist, Bengal. The result of the analysis is given below:—

	Sample No. I. (high land).	Sample No. II. (low lying paddy land).
	Per cent.	Per cent.
Moisture	1·84	2·78
Loss of ignition	3·54	4·50
Insoluble silicate and sand	77·78	73·53
K 20 (total)	1·06	1·20
CaO	3·24	2·87
M. G. O.	1·78	1·99
R. 205	0·13	0·13
Nitrogen	0·082	0·10

Season and rainfall.—The weather condition was favourable from the beginning of the year. Sugarcane-planting and sowing of *aus* paddy and jute were completed in proper time. But the excessive rainfall as well as the rise of river water in the middle of September flooded the farm. The whole paddy and sugarcane areas were water-logged for more than a fortnight, which checked the growth of the crop to a certain extent. The *rabi* crops grew quite well, but the rainfall in the beginning of March caused serious damage to gram, *khesary*, etc. The statement of rainfall recorded on the farms during the year is given below:—

Months.	Actual rainfall in inches.	No. of rainy days.	Normal rainfall in inches.
April 1925	12·63	9	10·80
May „	5·44	7	5·56
June „	8·53	14	10·81
July „	14·16	15	11·45
August „	7·76	16	10·75
September „	11·93	9	10·40
October „	1·70	3	4·46
November „	..	..	0·31
December „	..	..	0·06
January 1926	1·60	1	0·34
February „	4·206	1	0·89
March „	1·49	6	1·15
Total ..	69·446	81	66·98

Operations during the year.—

I. Experiments—

(*a*) Varietal test with *aus* paddy.

(*b*) Varietal test with winter paddy.

(*c*) Manurial test on winter paddy.

(*d*) Manurial test with sodium nitrate.

(*e*) Manurial test on yellow *tanna* sugarcane.

(*f*) Manurial test on *juar*.

II. Seed propagation—

(*a*) *Indrasail* paddy.

(*b*) Yellow *tanna* sugarcane.

III. Non-experimental cultivation.

IV. Cultivation on economic basis.

Aus paddy.—*Varietal test with local* marisbuti vs. *Dacca Nos. 2, 4 and 6.*—The Economic Botanist, Bengal, continued this experiment for the last five years. It is noticed that Rajshahi soil is not suitable for Dacca varieties; hence, the experiment has been discontinued under instructions from the Economic Botanist, Bengal.

Non-experimental.—*Aus paddy.*—Acres 5·40 were put under *aus* paddy which gave an outturn of 82 maunds and 12 seers paddy and 65 maunds and 20 seers straw.

Winter paddy.—(*a*) *Varietal test with winter paddy.*—This experiment was conducted by the Economic Botanist and is being continued for the last four years. The result of the experiment is given below (Statement I).

(*b*) *Manurial experiment.*—A series of experiments was laid out this year, as desired by the Deputy Director of Agriculture, Northern Circle, to test the effect of sodium nitrate on winter paddy (transplanted). The result is given below (Statement II).

Manurial experiment with winter paddy.—This experiment is being conducted by the Agricultural Chemist for the last three years. The result of the experiment is given below (Statement III).

STATEMENT I.

Economic Botanist experiment on winter paddy, 1925-26 (A 36-41) *1/40th acre each sub plot.*

Plot No.	Variety.	Date of harvest.	Weight of green grain.	Weight of dry grain.	Weight of straw.	Weight of grain per acre.	No. of bundles.
			Sr. ch.	Sr. ch.	Md. sr. ch.	Md. sr. ch.	
A3ba	*Jasobalam* ..	7th December 1925 ..	21 0	19 12	235 12 0	19 30 0	110
A38E	*Do.* ..	Do. ..	22 8	20 12	1 4 8	20 30 0	100
A38a	*Do.* ..	Do. ..	31 0	30 0	1 26 0	30 0 0	125
A39e	*Do.* ..	Do. ..	27 4	26 8	1 28 4	26 20 0	95
A40a	*Do.* ..	Do. ..	29 8	28 8	1 18 0	28 20 0	112
A41E	*Do.* ..	Do. ..	31 0	29 0	1 37 12	29 20 0	110
A36b	*Gazia* ..	8th December 1925 ..	31 6	28 14	2 25 0	28 35 0	132

Plot No.	Variety.	Date of harvest.	Weight of green grain.	Weight of dry grain.	Weight of straw.	Weight of grain per acre.	No. of bundles.
			Sr. ch.	Sr. ch.	Md. sr. ch.	Md. sr. ch.	
A37F	*Gazia* ..	8th December 19 5 ..	22 8	20 0	0 38 8	20 0 0	90
A38b	*Do.* ..	Do. ..	28 0	26 12	1 14 0	26 30 0	105
A39F	*Do.* ..	Do. ..	25 8	24 0	1 5 12	24 0 0	104
A40b	*Do.* ..	Do. ..	29 8	26 8	1 15 0	26 20 0	111
A41F	*Do.* ..	Do. ..	25 12	24 0	1 12 8	24 0 0	98
A36c	*Dudsar* ..	18th December 1925	20 4	18 4	2 23 12	18 18 10	126
A37G	*Do.* ..	Do. ..	23 4	22 4	1 14 8	22 10 0	104
A38c	*Do.* ..	Do. ..	31 4	29 0	1 26 0	29 0 0	117
A39G	*Do.* ..	Do. ..	27 12	26 12	1 17 8	26 30 0	106
A40c	*Do.* ..	Do. ..	26 4	24 8	0 13 8	24 20 0	96
A41G	*Do.* ..	12th December 1925	34 0	30 2	1 27 4	30 5 0	133
A36d	*Elai* ..	18th December 1925	24 8	22 8	1 32 4	22 20 0	123
A37h	*Do.* ..	Do. ..	24 8	22 8	1 32 4	22 20 0	123
A38D	*Do.* ..	Do. ..	25 4	23 4	1 1 8	23 10 0	96
A39h	*Do.* ..	Do. ..	22 8	21 0	0 36 8	21 0 0	94
A40d	*Do.* ..	Do. ..	26 8	25 2	1 4 8	25 5 0	108
A41h	*Do.* ..	Do. ..	26 4	25 0	1 13 0	25 0 0	116
A36E	*Dadkhani* ..	12th December 1925	26 8	25 8	1 25 8	25 20 0	101
A37a	*Do.* ..	Do. ..	25 8	24 0	1 20 8	24 0 0	91
A38E	*Do.* ..	Do. ..	19 8	18 4	1 2 0	18 10 0	78
A39a	*Do.* ..	13th December 1925	25 8	23 4	1 20 0	23 10 0	96
A40E	*Do.* ..	Do. ..	23 0	21 0	1 21 8	21 0 0	99
A41a	*Do.* ..	Do. ..	24 8	22 0	1 15 0	22 0 0	85
A36F	*Batraj* ..	17th November 1925	13 8	11 8	1 33 0	11 20 0	96
A37b	*Do.* ..	Do. ..	20 0	18 8	1 14 0	18 20 0	98
A38F	*Do.* ..	Do. ..	20 2	19 0	0 30 8	19 0 0	77
A39b	*Do.* ..	Do. ..	20 6	18 8	1 18 0	18 20 0	108
A40F	*Do.* ..	Do. ..	21 0	19 10	1 2 12	19 25 0	106
A41b	*Do.* ..	Do. ..	11 8	9 8	1 24 0	9 20 0	123
A36G	*Jhinghasail*	8th December 1925 ..	24 0	21 8	2 3 8	21 20 0	103
A37C	*Do.* ..	Do ..	26 8	25 0	1 10 4	25 0 0	95
A38G	*Do.* ..	Do. ..	23 8	21 10	0 33 8	21 25 0	85
A39C	*Do.* ..	Do. ..	31 4	30 0	1 7 4	30 5 0	89
A40G	*Do.* ..	Do. ..	29 8	28 8	1 12 12	28 20 0	91
A41C	*Do.* ..	Do. ..	23 8	20 0	1 25 0	20 0 0	108
A36h	*Indrasail* ..	13th December 1925	27 0	25 0	2 10 0	20 0 0	97
A37D	*Do.* ..	Do. ..	32 12	30 8	1 22 0	30 20 0	88
A38h	*Do.* ..	Do. ..	23 8	22 8	1 10 0	22 20 0	105
A39D	*Do.* ..	Do. ..	26 12	25 12	1 8 0	25 30 0	77
A40h	*Do.* ..	Do. ..	25 0	24 4	1 1 0	24 10 0	82
A41d	*Do.* ..	Do. ..	28 8	27 4	1 13 12	27 10 0	90

STATEMENT II.

Result of experiments on Indrasail *paddy with sodium nitrate, 1925-26.*

(Plot A 51-55.)

No. of plot.	Area in acre.	Name of paddy.	Manure used.	Weight of green grain.	Weight of dry grain.	Weight of straw.	No. of bundles.
				Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	
A51	·13	*Indrasail* ..	No manure ..	2 6 1	1 39 4	4 22 8	350
A52	·13	*Do.* ..	Nitrate of soda ..	2 20 6	2 14 4	4 12 8	399
A53	·1	*Do.* ..	No manure ..	2 14 4	2 7 8	3 32 12	355
A54	·1	*Do.* ..	Nitrate of soda ..	2 7 8	2 1 0	3 12 6	323
A55	·1	*Do.*	No manure ..	2 20 8	2 11 8	4 6 4	396

STATEMENT III.

Manurial experiment of Agricultural Chemist on winter paddy (Indrasail) *for the year 1925-26.*

(Three years' experiment.)

Plot No. ($\frac{1}{20}$ acre.)	Name of manure.	Quantity applied.	Date of transplanting.	Date of harvesting.	Weight of green grain.	Weight of dry grain.	Weight of straw.	No. of bundles.	Weight of grain per acre.
					Md. sr. ch.	Md. sr. ch.	Md. sr. ch.		Md. sr. ch.
21a	No manure	....	31st July 1925 ..	13th December 1925	1 14 0	1 11 8	2 10 12	210	20 20 10
21b	Bone-meal every year ..	6¼ lbs. ..	Do. ..	Do.	1 16 8	1 14 4	2 0 8	230	27 0 5
22a	Bone-meal every second year ..	....	Do. ..	Do. ..	1 5 8	1 3 4	1 22 0	198	21 20 5
22b	Bone-meal every third year ..	6¼ lbs. ..	Do. ..	Do. ..	1 10 0	1 7 10	1 36 0	335	23 20 12½
23a	No manure	....	Do. ..	Do. ..	1 6 0	1 3 8	1 25 0	177	21 20 10
23b	Rock phosphate every year ..	5 lbs. ..	Do. ..	Do. ..	1 4 0	1 0 8	1 17 4	175	20 0 10
24a	Rock cowdung every year ..	5 lbs. + 7½ mds. ..	Do. ..	Do. ..	1 24 0	1 20 12	2 15 0	243	30 0 5
24b	No manure ..	....	Do. ..	Do. ..	1 15 12	1 13 8	2 0 12	211	26 20 10
25a	Rock phosphate cowdung every year.	5 lbs. + 7½ mds. ..	Do. ..	Do. ..	1 25 11	1 22 12	2 16 0	247	31 0 15
25b	Bone-meal every year ..	6¼ lbs. ..	Do. ..	Do. ..	1 19 0	1 16 0	1 29 0	227	28 0 0
26a	Bone-meal every second year	....	Do. ..	Do.	1 15 8	1 11 4	1 39 0	220	25 20 5
26b	Bone-meal every third year ..	6¼ lbs. ..	Do. ..	Do. ..	1 19 14	1 16 8	2 7 0	239	28 0 10
27a	No manure	....	Do. ..	Do. ..	1 10 0	1 7 8	1 36 8	212	23 20 10
27b	Rock phosphate every year ..	5 lbs. ..	Do. ..	Do. ..	1 19 4	1 16 8	2 27 12	225	28 0 10
28a	Rock phosphate cowdung every year.	5 lbs. + 7½ mds. ..	Do. ..	Do. ..	1 35 12	1 33 0	3 0 0	246	36 20 0
28b	No manure	....	Do. ..	Do. ..	1 22 8	1 18 12	2 19 8	223	29 0 15

Seed propagation.—Acres 14·60 were put under *Indrasail* paddy for seed propagation which gave an outturn of 266 maunds, 5 seers and 11 chittaks of paddy and 36,010 bundles of straw. The whole quantity of grain has been reserved for seeds.

Sugarcane.—(*a*) *Manurial test.*—This experiment is being conducted by the Agricultural Chemist, Bengal, for the last four years to find out a suitable fertiliser for sugarcane of the Rajshahi type. The result of the experiment is given below:—

Plot No.	Crops.	Area.	Name and quantity of manure per acre.	Weight of cane.	Weight of *gur*.	Weight of juice.	Weight of *gur*. per acre.
		Acres.		Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.
C8blA	Yellow *tanna* sugarcane.	·05	100 mds. cowdung and 15 mds. castor cake.	34 36 6	23 1 9	3 36 12	78 15 0
C8blF	Do. ..	·05	Ditto ..	35 23 12	23 34 10	4 3 12	81 35 0
C8blb	Do. ..	·05	100 mds. cowdung and 4 mds. ammonium sulphate.	37 29 0	25 1 7	4 13 14	86 37 8
C8blG	Do. ..	·05	Ditto ..	33 2 8	23 1 2	3 29 0	74 20 0
C8blC	Do. ..	·05	100 mds. cowdung and 4 mds. nitrate.	31 7 4	20 5 4	3 24 0	72 0 0
C8blh	Do. ..	·05	Ditto ..	30 9 0	19 37 13	3 20 6	70 7 8
C8bld	Do. ..	·05	100 mds. cowdung and 6 mds. sodium nitrate.	32 10 8	21 26 9	3 33 12	76 35 0
C8Nli	Do. ..	·05	Ditto ..	30 5 8	20 8 1	3 10 4	65 5 0
C8ble	Do. ..	·05	100 mds. cowdung and 5 mds. superphosphate.	30 18 8	20 3 14	3 25 6	72 27 8
C8blJ	Do. ..	·05	Ditto ..	26 35 8	19 11 12	3 10 14	65 17 8

(*b*) *Yellow tanna sugarcane for seed propagation.*—Acres 3·80 were put under yellow *tanna* sugarcane which gave an outturn of 209 maunds, 19 seers and 3 chittacks of *gur* and 63,603 setts.

(*c*) *Sugarcane (C. O. 213).*—Acre 1·00 was put under C. O. 213 variety to test whether this variety can compete with yellow *tanna* cane. This test will continue. This gave an outturn of 72 maunds, 21 seers and 8 chittacks of *gur* and 22,800 setts.

(*d*) *Java system of propagation.*—This experiment is being conducted under orders of the Director of Agriculture, Bengal, for the last three years to remove the difficulties of supplying a large number of setts to the cultivators. This has proved a failure and the experiment has been discontinued.

Jute.—Acres 1·15 of land were grown with D154 and 1·43 acres with Chinsura green jute which gave an outturn of 23 maunds, 17 seers and 4 chittacks and 33 maunds, 38 seers and 8 chittacks of fibre respectively.

Juar.—A series of experiments was laid out this year to test the effect of sodium nitrate on *juar*. The result of the experiment is given below:—

No. of plot.	Crop.	Area.	Manure applied per acre.	Actual weight of green fodder.	Weight of green fodder per acre.
		Acre.		Md. sr. ch.	Md.
D22a	*Juar* ..	·16	150 mds. cowdung	43 6 0	258 36
D22b	*Do.* ..	·16	150 mds. cowdung and 1 md. 2 srs. sodium nitrate.	48 16 0	290 16
D22C	*Do.* ..	·16	150 mds. cowdung	30 22 8	183 15
D22D	*Do.* ..	·16	150 mds. cowdung and 1 md. 2 srs. sodium nitrate.	35 32 8	214 35
D22E	*Do.* ..	·16	150 mds. cowdung	23 20 0	141 0
D22F	*Do.* ..	·16	150 mds. cowdung and 1 md. 2 srs. sodium nitrate.	27 18 0	164 28

Non-experimental—*Juar.*—Acre ·74 of land was grown with *juar* which gave an outturn of 163 maunds, 37 seers and 8 chittacks green fodder and ·60 acre of land was sown with *juar* mixed with *rahar* as desired by the Director of Agriculture, Bengal. Owing to water-logging, the *rahar* plants did not thrive at all. An outturn of 25 maunds and 39 seers green fodder was received from the area.

Vegetables.—Acre ·63 was grown with vegetables, the sale proceeds of which amounted to Rs. 238-4.

Potatoes.—On ·58 acre of land potatoes were grown. After the germination, almost all the plots were badly damaged by cut worms. The total outturn received out of this was 18 maunds.

Khesary.—Acres 8·33 were put under *khesary*, one-fifth of which was grazed by the farm cattle. An outturn of 51 maunds, 39 seers and 14 chittacks of grains and 150 maunds of *bhusa* was received.

Dhaincha green manure.—Acres 11·57 of land were put under *Dhaincha* for green manuring.

Wheat.—Acres 2·30 of land were put under wheat—Pusa No. 12. An outturn of 15 maunds, 19 seers and 4 chittacks of wheat and 41 maunds and 17 seers of *bhusa* are obtained.

Lentils.—Acre 1·00 of land was put under lentils which gave an outturn of 10 maunds, 35 seers and 12 chittacks of grains and 8 maunds and 4 seers of *bhusa*.

Tobacco.—Acre ·66 of land was put under Mutihary tobacco. The crop was harvested towards the close of the year.

Gram mixed with mustard and lentils.—Acres 2·53 were put under gram mixed with mustard; 8·30 acres were put under gram mixed with linseed. Only mustard has been harvested with an yield of 3 maunds and 24 seers of grains. (The result will be submitted when the operation will be finished.)

Kalai.—Great difficulties for fodder were felt in the rainy season. The problem was solved by putting 4·53 acres under *kalai* which gave an outturn of 462 maunds, 20 seers and 8 chittacks of green fodder.

Cultivation on economic basis.—Acres 11·23 of land were separately cultivated on economic basis. Profit and loss accounts is given in the annexed statement.

2nd Economic Botanist's experiment with lentils.—A few varieties of lentils were tried by the 2nd Economic Botanist, Bengal. The result of the experiment will be mentioned in his own record.

Poultry.—Poultry has again been started from the year 1923-24. One dozen setting eggs of Rhodes Island Red variety were procured from Lucknow. There is a large demand of setting eggs which indicates that the general public is appreciating the breed and is anxious to breed good varieties in place of ordinary ones. A detailed account of eggs, etc., and liabilities is given below:—

STATEMENT IV.

Assets.	Rs.	A.	P.	*Liabilities.*	Rs.	A.	P.
(1) R. I. R. cocks (4 at Rs. 5 each) ..	20	0	0	(1) Cost of attendance	26	12	9
(2) Ditto (10 at Rs. 5 each) ..	50	0	0	(2) Cost of food	96	4	0
(3) R. I. R. Chickens (42 at Re. 1 each)	42	0	0				
(4) Country hens 5 (at 12 annas each) ..	3	12	0				
(5) Price realised for eggs sold ..	44	13	6				
(6) One hundred and fifty-four egg setts for hatching	19	4	0				
(7) Eggs in stock (17 at 2 annas each) ..	2	2	0				
Total ..	181	15	6	Total ..	123	0	9

Cattle—(*1*) *Breeding bull.*—Two stud bulls (half breed Hissar-country) were supplied to this farm from the cattle farm at Rangpur for breeding purposes. At present there is one bull in this farm for the purpose and the other has been transferred to Berhampur farm. There were nine services during the year.

(2) *Draught cattle.*—There were 18 bullocks and five buffaloes on the farm during the year.

Distribution of seeds.—During the year under report 62 maunds, 32 seers and 4 chittacks of *Indrasail* paddy, 10 maunds of *Kataktara* paddy, 5 maunds, 20 seers and 4 chittacks of Pusa wheat No. 12 and 25,250 sugarcane cuttings were distributed among the cultivators.

Visits.—The farm was frequently visited by the Deputy Director of Agriculture of this circle. The Economic Botanist to the Government of Bengal, the Agricultural Chemist to the Government of Bengal and the Fibre Expert visited the farm in connection with their experiments. The Director of Agriculture, Bengal, and the Assistant Director of Agriculture visited the farm once each during the year. The farm was also visited by many private persons.

Practical training in agriculture.—During the year under report, two sons of cultivators were taken in for practical training in agriculture. One of them left the farm after about a month's work and the other is working.

A. R. MALIK,

Deputy Director of Agriculture,
Northern Circle, Bengal.

Profit and loss account of economic area of the Rajshahi farm for the year 1925-26.

Plot No.	Crops.	Area.	Yield.	Rate.	Price of yield.	By-product.	Rate.	Price of by-product.	Total receipt.	Cost, labour, seeds, manures and packing charge.	Profit.
		Acres.	Md. sr. ch.	Rs. A. P.	Rs. A. P.	Bundles.	Rs. Per cent.	RS. A. P.	Rs. A. P.	Rs. A. P.	Rs. A.
A1b	Jute	·80	26 1 8	20 2 0	524 0 0	250 (sticks)	5	12 8 0	536 8 0	112 1 0	424 7 0
A2	Do.	·33	8 2 0	15 4 0	122 12 3	75	5	3 12 0	126 8 3	34 0 3	92 8 0
A3 & 4	Do.	·30	9 11 0	16 5 6	151 9 6	75	5	3 12 0	155 5 6	31 11 0	123 10 6
C3a	Do.	·95	14 6 4	16 5 6	231 5 6	200 (sticks) Setts.	5	10 0 0	241 5 6	94 1 6	147 4 0
C4	Sugarcane	1·00	62 38 3	8 0 0	503 10 3	17,800	Per 1,000 5	140 0 0	643 10 3	206 13 9	436 12 6
C6	Do.	1·50	68 38 12	8 0 0 *p. m.*	551 12 0	23,153	5	115 12 3	667 8 3	411 3 6	256 4 9
C8b2	Do.	1·00	72 21 8	8 0 0 *p. m.*	580 5 0	21,500	5	107 8 0	687 13 0	321 8 6	366 4 6
D1	Winter paddy	·20	5 21 0	4 0 0 *p. m.*	22 1 6	Bundles. 408 (straw)	5	2 0 6	24 2 0	8 14 6	15 3 6
D3 & 4	Do.	·53	4 20 0	4 0 0 *p. m.*	18 0 0	771	5	3 13 9	21 13 9	17 0 6	4 13 3
D3, 5 & 6	Do.	·52	9 24 12	4 0 0 *p. m.*	38 7 6	1,262 (straw)	5	6 5 0	44 12 6	22 7 0	22 5 6
D7-10	Do.	1·40	36 25 9	4 0 0 *p. m.*	146 8 9	4,256	5	21 4 6	167 13 3	71 5 9	96 7 6
D11-15	Do.	·66	11 8 7	4 0 0 *p. m.*	44 13 6	1,636	5	8 3 0	53 0 6	29 0 0	24 0 6
D16	Do.	·38	9 36 8	4 0 0 *p. m.*	39 10 3	1,130	5	5 10 6	45 4 9	16 5 0	28 15 9
D27-28	Do.	1·66	36 36 10	4 0 0 *p. m.*	147 10 6	4,600	5	23 0 0	170 10 6	74 10 6	96 0 0
B4	Potato	·58	18 0 0	3 0 0 *p. m.*	54 0 0	....	..	....	54 0 0	147 9 0*	....
		11·81								Total ..	2,135 1 3

* The loss (Rs. 93-9) is due to the destruction of the crop by Agroit.

Financial statement of the Rajshahi farm for the year 1925-26.

Debits.

Heads of debits.	Amount of each sub-head.	Amount of each head.
	Rs. A. P.	Rs. A. P.
1. Sale proceeds in hand at the commencement of the year ..	....	....
2. (*a*) Value of last year's farm produce in stock at the commencement of the year ..	1,596 15 3	....
(*b*) Value of purchased stores and other raw materials of the previous year in stock at the commencement of the year ..	900 3 6	2,497 2 9
3. Amount of outstanding bills payable by the farm at the end of the year ..	....	....
4. Amount of the unrealised sale proceeds due to the farm at the commencement of the year	456 2 0	456 2 0
5. (*a*) Value of tools and plant and other agricultural implements in hand at the commencement of the year ..	3,613 4 0	..
(*b*) Live-stock in hand at the commencement of the year ..	1,784 14 0	5,398 2 0
6. Amount drawn from the treasury during the year—		
(*a*) Pay and allowance of the staff ..	3,638 7 0	....
(*b*) Wages of labourers ..	3,500 0 0	....
Reclamation	274 5 0	
(*c*) Purchase and feed of cattle	599 15 6	....
(*d*) Seeds, manures and implements, etc. ..	558 5 3	....
(*e*) Petty construction and repairs ..	291 8 0	....
(*f*) Cost of medical aid ..	4 5 0	....
(*g*) Purchase of furniture ..	23 8 0	....
(*h*) Cooly, cart and railway freight	....	....
(*i*) Office expenses and Miscellaneous ..	398 1 9	9,288 7 6
(*j*) Cost of stores, seeds, etc., received from other farms within or outside province by—		
(*i*) Book transfer	....	....
(*ii*) Stock transfer	5 6 0	....
(*iii*) Stock transfer from farm produce	1,174 15 9	1,180 5 9
Total ..		18,820 4 0

Credits.

Heads of credits.	Amount of each sub-head.	Amount of each head.
	Rs. A. P.	Rs. A. P.
1. Sale proceeds in hand at the end of the year ..	....	....
2. (*a*) Value of farm produce in stock for sale and farm use on 31st March 1926 ..	3,651 1 6	....
(*b*) Value of the purchased stores and other raw materials in stock at the end of the year ..	994 8 0	4,645 9 6
3. Amount of the outstanding bills payable by the farm at the commencement of the year ..	....	....
4. Amount of the unrealised sale proceeds due to the farm at the end of the year ..	63 6 0	63 6 0
5 (*a*) Value of tools, plant and other agricultural implements in hand at the end of the year ..	3,661 12 0	....
(*b*) Live-stock in hand on 31st March 1926	1,711 14 0	5,373 10 0
6. Amount paid in the treasury during the year—		
(*a*) Amount credited in cash into treasury	3,838 2 3	....
(*b*) Value of stores, seeds, etc., supplied to other farms and seed stores within or outside the province by—		
(*i*) Book transfer	72 10 0	....
(*ii*) Stock transfer	1,193 0 9	5,103 13 0
Total ..		15,186 6 6
Excess of expenditure over receipts, *ie.*, loss		3,633 13 6
Total ..		18,820 4 6

APPENDIX XXXV.

Annual Report of the Bogra Farm for the year 1925-26.

Introduction.—The farm is on the west of Bogra town not far off from the railway station. The soil of the farm represents the typical heavy *khear* land only suitable for paddy. The total area of the farm is 22·9 acres, of which 14·7 acres were under cultivation during this year under report, the rest being occupied by roads, drains, tank and buildings.

Improvement.—This year a cooly shed, with accommodation for six men and a threshing floor, was completed by the Public Works Department. The construction of an open godown for implements, and arrangements for drinking water could not yet be taken up.

On the 28th March 1926 one bull for serving the cows of this locality was received from the Rangpur Cattle Farm.

Season and rainfall.—Though the total rainfall was normal, the weather was unseasonable with irregular distribution of rain, as will be found from the table of the rainfall given below. Maize for hot weather fodder with irrigation, *juar* and cowpea for fodder, maize and *rahar* mixture, maize and cotton mixture and *Dhaincha* for seed could not be grown for heavy rain in April 1925, and also manurial experiment with *juar* as fodder did not do well on account of the rain. Also the sugarcane was unsatisfactory for the plot was often under water during rains.

The rainfall table is given below:—

Month and year.		Rainfall in inches.	Normal rainfall.	Deviation from the normal.
April	1925	9·54	2·40	7·14
May	,, ...	7·68	8·66	0·98
June	,, ...	8·56	13·81	5·25
July	,, ...	11·18	13·40	2·22
August	,, ...	9·56	12·63	3·07
September	,, ...	12·90	10·97	1·93
October	,, ...	4·75	4·31	0·44
November	,, ...	0·19	0·60	0·41
December	,, ...	....	0·09	0·09
January	1926	0·68	0·42	0·26
February	,, ...	0·11	0·88	0·77
March	,, ...	0·93	1·11	0·18
Total	.. ..	66·08	69·28	3·20

Staff.—During the year under report, the farm was under the supervision of late Babu P. N. Sen Gupta, who died here, after rendering worthy service to this Department for many years, on the 22nd December 1925, Babu Abani Mohan Das officiated from 24th December 1925 to 17th January 1926, Md. Hossain Ali from 18th January 1926 to 17th March 1926 when Babu Bhabesh Chandra Roy took over charge as Officiating District Agricultural Officer, the Agricultural Officer was assisted by two fieldmen demonstrators for the management of the farm and office, but in January 1926 one of them was deputed to Dacca for training in the Refresher course, and from that time onwards the farm was understaffed. The staff worked overtime specially during March 1926 when there was a great pressure of work in closing all the records and accounts.

"The posting of a clerk and an overseer is indispensably necessary for the regular management of a farm and combined office, otherwise the District Agricultural Officer is to remain pinned down in the office and farm at a great sacrifice of his district propaganda and organisation work which are so necessary to make the Department popular." This was said in the last year's report by the experienced late P. N. Sen Gupta and it still holds good.

The following works were undertaken on the farm during the year under report:—

(I) Experiments.
(II) Seed propaganda.
(III) Fodder crops.
(IV) Cultivation on Economic basis.
(V) Miscellaneous crops.

Work done in the farm.—

(1) *Experiments.—*

(1) Varietal test:—

(*a*) Varietal experiment in *aman* paddy: Dl, Dll, D5 and local *Indrasail*.
(*b*) Varietal experiment of early *aman* Dll *versus* local early *aman*. *Raimugi*.
(*c*) *Kataktara aus versus* local *aus*.

(2) Effect of manure on *aman* paddy:—

(*a*) Manurial experiment: Dll paddy with sodium nitrate and cowdung.
(*b*) Dl paddy green manure *versus* cowdung.
(*c*) Dl paddy no manure after bonemeal *versus* cowdung.

(3) Effect of manure on aus paddy—

(*a*) *Kataktara aus*, with (1) sodium nitrate.
(*b*) Sodium nitrate and cowdung.
(*c*) Cowdung.
(*d*) No manure.

(4) Effect of manure on *juar* as fodder—

(*a*) *Juar* with sodium nitrate.
(*b*) Sodium nitrate and cowdung.
(*c*) Cowdung.
(*d*) No manure.

(5) Irrigation experiment on hot weather maize for fodder.

(6) Fibre Expert's varietal experiment with jute.

(2) Seed propagation—

(*a*) *Indrasail*.
(*b*) *Kataktara*.
(*c*) Yellow *tanna* sugarcane and CO. 213.
(*d*) D. 154 jute.
(*e*) C. green jute.
(*f*) *Dhaincha* for seed.

(3) Raising of fodder crops—

(*a*) *Juar* and cowpea for fodder.
(*b*) *Matikalai*.

(4) Cultivation on economic basis—

(Paddy: Dl, Dll raingauge (local early *aman*). D5 local *Indrasail*.

(5) Miscellaneous crops—

(*a*) Maize and cotton mixture.
(*b*) Maize and *rahar* mixture.

1. Details of experiments conducted—

(*a*) Varietal experiment in *aman* paddy was tried amongst four varieties: Dl, Dll, D5 and local variety also known as *Indrasail*.

The results of the experiment are given below, and it will be found that the departmental *Indrasail* (Dl) has given the best outturn:—

Plot No.	Area in acre.	Variety.	Actual outturn.		Outturn per acre.	
			Grain.	Straw.	Grain.	Straw.
			Md sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.
38, 44, 44b ..	·266	Dl (departmental *Indrasail*).	6 0 8	11 5 12	22 24 0	41 35 12
36, 40, 42 ..	·3	Dll ..	5 2 0	9 10 0	16 35 5	30 33 5
41, 44A, 44C ..	·232	D5 ..	4 2 4	6 17 12	17 19 5	25 21 0
37, 39, 43 ..	·3	Local *Indrasail*	5 15 0	9 27 0	17 36 10	32 10 0

(*b*) Early varietal experiment was done with Dll and local early *aman Raimugi*. The result of the experiment is given below, and it will be found that local *Raimugi* is a bit earlier:—

Plot No.	Area.	Variety.	Date of trans-planting.	Date of harvest.	Actual outturn.		Actual outturn per acre.	
					Grain.	Straw.	Grain.	Straw.
					Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.
16, 18, 21, 23	·4	D11 ..	25-7-25	25-11-25 30-11-25	5 12 0	8 4 4	13 10 0	20 10 10
17, 19, 20, 22	·4	*Raimugi*	23-7-25	14-11-25 15-11-25	5 36 0	8 12 0	14 30 0	20 30 0

(*c*) Varietal experiment of *aus* paddy was arranged between departmental *Kataktara* and local prolific variety *Indu*. The plots are a bit low and got water-logged during the rains. The outturn of *Kataktara* was less than that of *Indu*, which is the reverse of last year.

The result of experiment is given below:—

Plot No.	Area.	Variety.	Actual outturn.		Outturn per acre.	
			Grain.	Straw.	Grain.	Straw.
			Md. sr.	Md. sr.	Md. sr.	Md. sr.
71, 76	·2	*Kataktara* ..	2 8	6 15	11 0	31 35
72, 75	·2	Local *aman* ..	3 23	8 4	17 35	40 20

2. (*a*) Manurial experiment was tried with D 11 *aman* paddy, and the result of the experiment is given below:—

Plot No.	Area.	Name and quantity of manure applied.	Actual outturn.		Outturn per acre.	
			Grain.	Straw.	Grain.	Straw.
		Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.
83, 90A	·183	0 3 12 (sodium nitrate).	2 24 0	3 18 12	14 8 0	18 38 3*
84, 89	·2	0 8 0 (sodium nitrate).	3 5 0	5 30 0	15 25 0	28 30 0†
85, 88	·2	0 8 0 (sodium nitrate *plus* cowdung 10 mds).	3 16 0	6 0 0	17 0 0	30 0 0‡
86, 90B	·183	No manure ..	2 6 0	3 10 0	11 29 0	17 30 0§

* At 20 seers sodium nitrate per acre.
† At 1 md. sodium nitrate per acre.
‡ At 1 md. sodium nitrate and 50 mds. cowdung per acre.
§ No manure.

From the above table it is found that cowdung is the best manure if it is available. But we do not get required quantity for manuring the land in which case some artificial manure should be substituted. Fifty maunds cowdung and

1 maund sodium nitrate also gives a fair outturn. In this way we can use 1 maund artificial manure if we do not get another 50 maunds cowdung.

(*b*) *Green manure* versus *cowdung*—In *aman* paddy this experiment was tried ·3 acre under green manure and also ·3 acre was under cowdung. *Aman* paddy with cowdung gives good result. The result of the experiment is given below:—

Plot No.	Area.	Manure.	Actual outturn.		Outturn per acre.	
			Grain.	Straw.	Grain.	Straw.
			Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.
25, 27, 28, 30, 33, 35	·6	Green manure	10 12 20	16 0 4	17 21 4	26 27 1
24, 26, 29, 31, 32, 34	·6	Cowdung ..	11 13 0	17 18 0	18 35 0	29 3 5

(*c*) No manure after bonemeal *versus* cowdung was tried with Dl paddy. Last year bonemeal was applied in plots 51, 53, 55, 57, 59, 61 at the rate of 4 maunds per acre. No bonemeal was applied this year whereas in other plots cowdung was applied in the previous year at the rate of 100 maunds per acre, and this year too cowdung was applied at the rate of 75 maunds per acre. From the table below it will be seen that residual effect of bonemeal on the plot is somewhat increased in outturn:—

Result of experiment.

Plot No.	Area.	Manure applied.	Actual outturn.		Outturn per acre.	
			Grain.	Straw.	Grain.	Straw.
			Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.
51, 53, 55, 57, 59, 61	·6	No manure after bonemeal in the previous year.	10 17 8	16 20 0	17 15 13	27 20 0
52, 54, 56, 58, 60, 62	·6	75 mds. cowdung this year and 100 mds. cowdung previous year.	11 29 0	18 0 0	19 21 10	30 0 0

3. Effect of manure on *aus* paddy (*Kataktara*) was tried this year. Sodium nitrate in different doses, sodium nitrate and cowdung, only cowdung and no manure were experimented with. The result of the experiment is given below. From this it will be found that 1 maund sodium nitrate and 50 maunds cowdung give good result.

Plot No.	Area.	Name and quantity of manure applied per acre.	Actual outturn.		Outturn per acre.	
			Grain.	Straw.	Grain.	Straw.
			Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.
97 101 / 1, 2	·1	1 md. nitrate of soda and 50 mds. cowdung.	1 19 6	2 0 0	14 33 12	20 0 0
97 104 / 2, 2	·1	No manure ..	0 35 7	1 23 0	8 34 6	15 30 0
98 100 / 1, 1	·1	1 md. of sodium nitrate.	1 16 15	2 1 0	14 9 6	20 10 0
98 103 / 2, 2	·1	20 srs. sodium nitrate.	0 39 0	1 27 0	9 30 0	16 30 0
101 100 / 1, 2	·1	100 mds. cowdung.	1 9 0	2 2 0	12 10 0	20 20 0

4. *Effect of manure on* juar *as fodder.*—On *juar* sodium nitrate in different doses, sodium nitrate and cowdung, only cowdung and no manure were tried, and the result of the experiment is given below :—

Plot 5 a b c 199 to 105 a b c could not be sown due to heavy rain and consequent water-logging of the plot. All plots were water-logged, so the outturn were poor :—

Plot No.	Area.	Manure applied.	Actual outturn of green fodder.	Outturn per acre.
			Md. sr. ch.	Md. sr. ch.
5 a b c / 99 to 105 a b c	·1	1½ sodium nitrate per acre	....	....*
4·9 / 99 to 105 a b c	·1	1½ sodium nitrate	12 20 0	125 0 0
3·8 / 99 to 105 a b c	·1	30 srs. sodium nitrate and 50 mds. cowdung.	15 9 1	152 10 10
2·7 / 99 to 105 a b c	·1	100 mds. cowdung	13 30 0	137 20 0
1·6 / 99 to 105 a b c	·1	No manure	12 10 0	122 20 0

* Could not be sown for waterlogging of the plot.

5. Irrigation experiment on hot weather maize for fodder was arranged, but plots 120 a b could not be sown for heavy rains and water-logging and plots 120 c d failed after sowing for the same reason. Afterwards *aman* paddy was transplanted on those plots.

6. Varietal experiment on jute (*Corchorus Capsularis*) was carried out with the following varieties :—

D. 154 Fanduk, R. 85 and local *Kamarjani*. One hundred maunds cowdung per acre was applied on each plot. From the table of the result given below it will be found that D. 154 gave the highest outturn :—

Plot No.	Area.	Variety.	Actual outturn per acre.	Outturn per acre.
			Md. sr. ch.	Md. sr. ch.
1·5 / 91, 92, 94, 95, 96	·1	D 154	1 20 6	15 0 0
2·6 / 91, 92, 94, 95, 96D	·1	Fanduk	1 5 0	11 10 0
3·7 / 91, 92, 94, 95, 96D	·1	R. 85	1 2 14	10 28 12
4·8 / 91, 92, 94, 95, 96D	·1	Local *Kamarjani*	1 11 12	12 37 8

2. **Seed propagation**—(*a*) *Indrasail* (*Dl*).—For pure seeds Dl paddy was grown on ·4 acres, but from ·35 acre land 32 srs. 8 chs. pure seeds were obtained.

(*b*) *Kataktara*.—On ·1 acre *Kataktara* was grown for seed and 32 srs. 15 chs. pure seeds were obtained.

(*c*) *Yellow tanna sugarcane and Co. 213.*—There was ·332 acre under the former and ·05 acre under the latter. The crop was stunted and did not do well on account of water-logging of the plots. Some plants were also attacked by cane-borer, the tops were cut for setts and the remaining portion of the canes were sold locally.

Total number of cuttings of *tanna* came to 7,660, from which 800 cuttings with 1,000 cuttings of Co. 213 cuttings were sent to the District Agricultural Officer, Jalpaiguri. From the remaining area of ·03 of Co. 213 more than 2,000 cuttings are expected.

(*d*) *D. 154 jute* (*Capsularis*).—·4 acre was under this crop for raising the seeds; after taking the seeds, the fibre was extracted from it, and 2 mds. 3 srs. 4 chs. of pure seed and 1 md. 19 srs. 8 chs. fibre was obtained.

(*e*) *Chinsura green* (*Corchorus Olitorius*).—·2 acre was under Chinsura green jute for seed and 30 srs. pure seeds were obtained.

(*f*) *Dhaincha for seed.*—A plot ·4 acre was kept for this purpose; but owing to heavy rains sowing at proper time was rendered impossible.

3. **Fodder crops.**—The area under fodder crop was 2·13 acres, of which ·5 acre was under *juar* with manurial experiment, ·732 acre was under *juar* and cowpea, ·14 acre was under the *matikalai* and ·83 acre was under oats and peas. Under *juar* and cowpea the crop of ·4 acre completely failed on account of rains, and from the crops of ·332, only 22 mds. of green fodder was obtained. Later on these plots paddy was transplanted. As *juar* failed, ·415 acre areas put under *Matikalai* during October and 15 mds. 30 srs. of green fodder secured. From ·483 acre under oats and peas, 22 mds. 16 srs. of green fodder were obtained and fed to farm cattle from 22nd to 26th February 1926.

4. **Cultivation on economic basis.**—The following varieties of transplanted paddies were grown on economic basis: DI, DII, D5 local *Indrasail* and *Raimugi* (early *aman*), also jute for seed and fibre may be considered as economic crop. A table is given below with all its particulars:—

Table of profit and loss account on economic basis.

Variety.	Area.	Cost of cultivation, including cost of seed manure and bullock.	Weight of gram or fibre and seed.	Weight of straw or stick.	Price of outturn.	Profit.
		Rs. A. P.	Md. sr. ch.	Md. sr. ch.	Rs. A. P.	Rs. A. P.
D1 ..	3·604	212 9 0	68 4 0	103 29 12	376 6 6	163 13 6
D11 ..	1·068		26 3 11	48 19 4		
Local *Indrasail*	·166	81 0 0	2 17 8	3 31 0	193 0 0	112 0 0
D 5 ..	·083		2 30 8	5 24 0		
Raimugi Early *aman.*	·2					
D154 ..	·4	50 7 0	2 3 4 seed 1 19 8 fibre	2 0 0 stick	95 12 6	45 5 6
C. G. ..	·2	27 9 3	0 30 0 seed	1 20 0 ,,	39 4 0	11 10 9
Aus followed by D11.	·4	19 12 9	8 27 0 grain	14 19 0straw	49 2 9	29 6 0
		391 6 0			753 9 9	362 3 9

5. **Miscellaneous crop.**—(*a*) *Maize and cotton mixed.*—.166 acre was kept for this, but due to heavy rain in April the seed could not be sown.

(*b*) *Maize and rahar mixed.*—This cropping too was hindered by heavy rain and water-logging of the plot.

Cattle.—There are seven bullocks for farm work, but one of them is old and cannot work. One bull of half Hissar breed (sagar) from Rangpur Cattle Farm reached here on 28th March 1926 for the purpose of securing the local cows to improve the cattle breed of the locality.

Visitors.—The farm was visited by Divisional Commissioner and Assistant Director of Agriculture, Bengal, and on a few occasion by the District Magistrate. The Deputy Director of Agriculture, Northern Circle, visited occasionally.

A. R. MALIK,
Deputy Director of Agriculture,
Northern Circle (offg.).

Financial statement showing the result of Agricultural Farm, Bogra, for the year ending 31st March 1926.

Debits.						Credits.					
Heads.	Amount of each sub-head.			Amount of each head.		Heads.	Amount of each sub-head.			Amount of each head.	
	Rs.	A.	P.	Rs.	A. P.		Rs.	A.	P.	Rs.	A. P.
1. Sale-proceeds in hand at the commencement of the year *i.e.*, 1st April 1925	....			....		1. Sale-proceeds in hand at the end of the year	Nil			Nil	
2 (*a*) Value of last year's farm produce in stock at the commencement of the year	693	15	6			2. (*a*) Value of farm produce in stock for sale and farm use	1,039	1	0	....	
(*b*) Value of purchased stock and other raw materials of the previous year in stock at the commencement of the year	38	12	0	732	11 6	(*b*) Value of purchased stores and other raw materials in stock at the end of the year	64	9	3	1,103	10 3
3. Amount of out standing bills payable by the farm at the end of the year	Nil			Nil		3. Amount of out standing bills payable by the farm at the commencement of the year	15	0	0	15	0 0
4. Amount of unrealised sale-proceeds due to the farm at the commencement of the year	42	6	0	42	6 0	4. Amount of unrealised sale-proceeds due to the farm at the end of the year	26	11	0	26	11 0
5. Value of tools and plant and other agricultural implements in hand at the commencement of the year including furniture and live-stock	941	7	0	941	7 0	5. Value of tools and other agricultural implements in hand at the end of the year, including furniture and live-stock	940	15	0	949	15 0
6. Amount drawn from the treasury during the year—						6. Amount paid in treasury during the year—					
(*a*) Pay and allowance of staff	147	10	0			(*a*) Amount credited in cash in treasury	870	5	6	....	
(*b*) Wages of labourers	998	10	0			(*b*) Value of stores, seeds etc., supplied to other farms, seed depot within or outside the province by adjustment stock transfer	12	0	0	882	5 6
(*c*) Contingencies—										2,977	9 9
(*i*) Purchase and feed of cattle	265	11	9			Excess of expenditure over receipt, *i.e.*, loss	....			651	3 0
(*ii*) Seeds, manures and implements	127	1	6								
(*iii*) Petty construction and repairs	43	13	9								
(*iv*) Office expenses and miscellaneous	191	4	9								
(*d*) Cost of stores, seeds, farm produce received from other farms within or outside the province by adjustment and book transfer	138	0	6	1,912	4 3						
GRAND TOTAL	....			3,628	12 0	GRAND TOTAL	....			3,628	12 9

Explanation for loss.—The loss is due to office expenses, experimental work and feed to cattle when they are not required for farm work and remains idle, and also the depreciation calculated on the implements, furniture, live-stock, etc.

A. R. MALIK,

Deputy Director of Agriculture,
Northern Circle.

APPENDIX XXXVI.

Annual Report of the Pabna Agricultural Farm for the year 1925-26.

Introduction.—The farm is situated to the north of the town and just a mile from it. The work of the farm commenced in 1921-22, and in course of these few years, it has fully justified its existence and established a reputation as a demonstration and propagation centre. The area of the farm is 18·9 acres, of which 5·6 acres are occupied by buildings, tanks, roads, drains and canal, the rest (13·3 acres) being under cultivation. Five acres of land were reclaimed during the year, so that the entire area will now be put under cultivation. A small tank for retting jute was excavated and a cooly shed was constructed during the year.

Establishment.—Babu Nirmal Dev, Agricultural Officer, was in charge of the farm from the beginning of the year to 24th August 1925, when he was transferred and was succeeded by Babu Sachindra Krishna Dutt, District Agricultural Officer, who continued till the end of the year.

Babu Mahendra Kumar Das, Demonstrator, was engaged in office work of the farm throughout the year. Babu Hari Mohan De, Demonstrator, was in charge of field work up to 1st March 1926, when he went away on leave and Munshi Rahim Baksh Mandal, Demonstrator, was placed in charge of latter's work. There was one darwan of the farm throughout the year.

Soil.—The soil of the farm which is typical of the Sadar subdivision of the district is a silt with good moisture retentive capacity. It is thus suited to the cultivation of high land *aus Clitorius* jute, sugarcane, turmeric, *rahar*, potatoes, tobacco and all *rabi* crops. A plot of land 0·5 acre in area has been lowered one foot to make it suitable for growing transplanted *aman* paddy.

The result of soil analysis are noted below:—

Soil East Corner.

	Block A.—1-6.		Block A.— 11-30.	
	Surface soil.	Sub-soil.	Surface soil.	Sub-soil.
	Per cent.	Per cent.	Per cent.	Per cent.
Moisture	2·12	2·32	2·76	3·34
Loss on ignition (organic matter)	3·87	1·82	3·90	4·48
Acid insoluble sand and other impurities ..	70·33	73·51	69·58	65·32
CaO	4·98	4·97	4·12	5·63
MgO	1·97	1·97	2·37	1·62
P2O5	0·093	0·097	0·121	0·114
K2O	1·47	0·99	1·31	1·70
N	0·058	0·046	0·092	0·067

The soil is thus rich in lime, magnesium and potash, but poor in phosphoric acid and nitrogen.

Rainfall and character of the season.—The rainfall, month by month, is noted below :—

Month and year.	Actual rainfall.		Normal rainfall.	
	Amount in inches.	Number of days.	Amount in inches.	Variation from normal.
April 1925	8·74	10	3·11	5·0
May ,, ...	4·82	10	7·48	9·2
June ,, ...	6·85	16	11·38	13·9
July ,, ...	5·84	22	10·76	16·4
August ,, ...	5·58	16	10·63	16·2
September ,, ...	10·06	20	9·12	12·0
October ,, ...	2·88	10	4·42	5·3
November ,, ...	Nil	Nil	0·57	0·9
December ,, ...	Nil	Nil	0·11	0·2
January 1926	1·33	4	0·32	0·7
February ,, ...	Nil	Nil	1·01	1·7
March ,, ...	1·62	7	1·35	2·6
	47·72	115	60·26	..

The rainfall, though insufficient in the beginning of the year, was on the whole not much unfavourable to the farm crop. There was a storm in September which lodged the canes to some extent. The rainfall of January was of great help to the *rabi* crops.

Operations during the year.—The following crops were grown during the year :—

Kharif season.

Block No.	Name of crop.	Area.	Yield by main.	Yield by product.	Remarks
			Md. sr. ch.	Md. sr. ch.	
B	*Kataktara* paddy ..	·1	2 5 0	2 39 0	Manurial list. Manured with cowdung 10 maunds.
	Ditto ..	·1	2 4 0	3 13 0	Cowdung 5 mds. *plus* NaNo3 4 srs.
	Ditto ..	·1	1 39 0	2 14 0	NaNO3 4 srs.
	Ditto ..	·1	1 31 0	1 35 0	NaNO3 2 srs.
	Ditto	·1	1 36 0	2 12 0	Nil.

Block No.	Name of crop.	Area.	Yield by main.	Yield by product.	Remarks.
			Md. sr. ch.	Md sr. ch.	
	Chinsura green jute (for seed).	·4	1 8 0 (seed)	15 cartload of sticks.	
E	Ditto ..	1·0	3 6 0 (seed)	....	
			3 8 0 (fibre)	16 cartload of sticks.	
	Maize and cowpea (for fodder).	·85	225 0 0	Green fodder	
	Juar (ditto) ..	·65	72 10 0		
			Mds.	Mds.	
A	*Kataktara* paddy..	·15	1-24 paddy	1-32 straw	
	Kalabakri do ..	·1	1-25 ,,	1-25 ,,	
	Kataktara do ..	·1	1-4 ,,	1-10 ,,	Variety test.
	Kalabakri do ..	·1	1-35 ,,	1-32 ,,	
	Kataktara do ..	·1	1-3 ,,	1-28 ,,	
	Local capsularis ..	·05	20-12 ch. fibre		
	D 154 ..	·05	28-8 ch. ,,		
	Fundak ..	·05	27-0 ch. ,,		
	R 85 ..	·05	33-0 ch. ,,		Variety test.
	Local capsularis ..	·05	20-0 ch. ,,		
	D 154 ..	·05	25-12 ch. ,,		
	Fanduk ..	·05	21-0 ch. ,,		
	R 85 ..	·05	29-4 ch. ,,		
			Mds. srs. ch.		
	CO 213 sugarcane	·1	6 25 8 (gur)		Ditto.
	Tanna sugarcane	·1	7 1 1 (gur)		

Rabi Season.

Name of crop.	Area in acre.	Main crop.	Bye-product.	Remarks.
		Md. sr. ch.	Md. sr. ch.	
Matihari tobacco ..	·1	....	....	
Naokhol do ..	·1	....	....	
Manilla do ..	·1	....	....	
Darjeeling potato ..	·4	25 31 4	....	
Linseed ..	·2	0 20 8	....	
Gram ..	1·1			
Masur ..	·35	2 10 0	....	
Pusa wheat No. 12 ..	·05	0 17 5	0 24 9 straw	
,, ,, ,, 52 ..	·05	0 25 8	0 32 5	
Local wheat ..	·05	0 20 8	0 27 8	
Pusa No. 12 ..	·05	0 21 8	0 28 7	Variety test.
,, ,, 52 ..	·05	0 25 12	0 32 4	
Local ..	·05	0 23 12	0 30 2	
Pusa No. 12 ..	·05	0 24 2	0 31 3	
,, ,, 52 ..	·05	0 26 8	0 33 6	
Local ..	·05	0 23 4	0 30 4	
Oat and pea (for fodder)	1·5	80 0 0	Green fodder	
Matikalai (for fodder) ..	·5	20 10 0		

Cultivation on economic basis.—An area of 1·9 acre was set apart this year for cultivation on economic basis. The following statement gives the details of the result:—

Block No.	Name of crop.	Area sown.	Yield.	Value of produce.	Cost of cultivation.	Profit.
			Md. sr. ch.	Rs. A. P.	Rs. A. P.	Rs. A. P.
A	Chinsura green jute.	1·0	18 28 0	374 0 0	91 11 10	282 4 2
	Tanna sugarcane	0·9	63 10 10	577 2 0	399 1 5	178 0 7
	Rape ..	1·0	2 22 0	20 6 6	20 0 0	0 6 6

Cultivation on borga system.—No cultivation was done on *borga* system on this during the year under report.

Distribution of seeds, etc.—The following seeds were distributed during the year:—

Chinsura green jute seed	4 maunds.
Tanna cuttings	6,000 number.
Kataktara paddy	36 seers.

Cattle.—There were eight bullocks and a stud bull. The latter died of *Hæmorrhagic Septicemia* on 28th September 1925 and another stud bull reached from Rangpur Cattle Farm on the 10th December 1925. The bull has become popular, and the people of neighbouring villages bringing their cows for covering, 15 cows were served during the year.

Fishery and poultry.—As yet no attempt has been made to breed the fish or rear any poultry on the farm.

Practical training in agriculture.—Two sons of cultivators of neighbouring villages are given practical training in agriculture. They do all the operations themselves and get the usual daily wages.

Conference, Exhibition, etc.—No conference or exhibition was held at the farm during this year.

Visits and inspections.—The farm was visited once by each of the following officers:—

Director of Agriculture, Bengal, and the Assistant Director of Agriculture, Bengal, the Commissioner of the Rajshahi Division. The Collector of the district and the Deputy Director of Agriculture, Northern Circle, visited the farm several times.

A pleasing feature is the increasing number of cultivators and members of the general public who visit the farm and take advice on improved agriculture from the staff.

A. R. MALIK,

Deputy Director of Agriculture,
Northern Circle (Offg.).

Financial statement of the Pabna Farm for 1925-26.

Debits.

Heads of debits.	Amount of each sub-head. Rs. A. P.	Amount of each head Rs. A. P.
1. Sale-proceeds in hand on 1st April 1925 ..	....	....
2. (*a*) Value of last year's farm produce in stock on 1st April 1925 ..	108 15 0	....
(*b*) Value of purchased stores and other raw materials of last year in stock on 1st April 1925	55 0 0	163 15 0
3. Amount of outstanding bills payable by the farm at the end of the year ..	89 5 0	89 5 0
4. Amount of unrealised sale-proceeds due to the farm at the commencement of the year	....	....
5. Value of tools, plants and other agricultural implements in hand at the commencement of the year	381 12 0	381 12 0
6. Value of live-stock and furniture at the commencement of the year	1,345 0 0	1,345 0 0
7. Amount drawn from treasury during the year on account of—		
(*a*) Pay and allowance of staff ..	135 4 0	....
(*b*) Purchase of seeds, manures and implements ..	172 9 6	....
(*c*) Purchase and feed of cattle ..	327 8 0	....
(*d*) Office expenses and miscellaneous	280 1 0	....
(*e*) Wages of labourers	1,097 2 3	....
(*f*) Reclamation ..	1,150 0 0	....
(*g*) Cost of stores seeds, etc., received from other farms and adjusted by book transfer ..	119 13 6	3,282 6 3
educt—On account of apital expenditure ..	Nil	Nil.
		5,262 6 3

Credits.

Heads of credit.	Amount of each sub-head. Rs. A. P.	Amount of each head. Rs. A. P.
1. Sale-proceeds in hand on 31st March 1926. ..	....	....
2. (*a*) Value of farm produce in stock for sale or farm use	462 13 0	
(*b*) Value of purchased and other raw materials in stock at the end of the year	92 8 0	555 5 0
3. Value of live-stock and furniture at the end of the year ..	1,211 0 0	1,211 0 0
4. Amount of outstanding bills payable by the farm at the commencement of the year ..	13 15 0	13 15 0
5. Amount of unrealised sale-proceeds due to the farm at the end of the year ..	....	....
6. Value of tools, plants, etc., in hand at the end of the year ..	343 0 0	343 0 0
7. Amount paid in the treasury during the year—		
(*a*) Amount credited in cash into the treasury ..	1,252 2 6	
(*b*) Value of store, seeds, etc., supplied to other farm adjusted by book transfer ..	24 11 6	1,276 14 0
		3,400 2 0
Excess of expenditure over receipts, *ie.*, loss		1,862 4 3
		5,262 6 3

APPENDIX XXXVII.

Annual Report of the Dinajpur Farm for the year 1925-26.

Introduction.—The farm is situated on the eastern side of the Dinajpur town, and is about 1½ miles off from the Dinajpur Railway Station.

The site was selected by a committee of six members, including the Collector of Dinajpur, Director of Agriculture, Bengal, Deputy Director of Agriculture, Northern Circle, Civil Surgeon, Dinajpur, Vice-Chairman of the District Board and the Executive Engineer, Rajshahi Circle, on the 15th September 1920, and acquired in the month of June 1922 at the cost of Rs. 12,500.

The reclamation work was done during February and March 1926 under the control of the department, while the construction of the buildings was completed during 1924-25. The buildings were handed over by the Public Works Department to this department on the 15th September, 1925.

Area.—The cooly shed remains yet to be constructed. Total area of the farm is 24·213 acres, out of which about 7 acres is under buildings and roads and rest for cultivation.

Soils.—The soil is laterite and alluvial. The farm has all types of land—high, medium and low, and the lowest area that remains under water during the rainy season is fit for deep water paddy.

Object.—The object of the farm is to conduct experiments suggested by the expert officers and the Deputy Director of Agriculture, and to demonstrate by actual production on economic basis the improved strain of crops as recommended by the department.

As the farm is under occupation for a short period, and this being the first year when reclamation work was done, no experiments were undertaken.

As the accommodation for bullocks was not quite ready, 12 bighas of the paddy lands of the farm were let out on *borga*, on condition that the bargadar would receive half share of the produce, and these were put under winter paddy. *Indrasail, Dudsar* and local paddies were raised. Arrangements were made for testing lands of the different parts of the farm and for demonstrating the Departmental paddy by the cultivation of the abovementioned winter paddy crops. It was found on trial that the yield of the departmental paddy was 2 maunds 17 seers more per bigha than that of the local variety of paddy. *Kataktara aus* was transplanted as winter on 1½ bigha highland, and it proved a failure partly on account of the attack of insect pest, rice bug, and partly on acount of heavy rainfall during the flowering time.

As soon as the paddy crop was harvested, the uprooting of jungles and trees, levelling up of the lands, making farm roads, etc., the reclamation works were undertaken, and a good progress has been made during the year under report. It is expected that on the current year (1926-27), all that remains of the reclamation work will be completed, and the farm will be under regular cultivation. The following table shows receipt and expenditure for 1925-26:—

Receipts.	Rs.
Sale-proceeds of seeds	2
Value of farm produce paddy in hand	181
Total ..	183

Expenditure.	Rs.	A.	P.
Purchase of seeds, manures and fmplements, etc. ..	18	6	9
Labour	4	8	0
Reclamation and jungle clearing	720	5	0
Municipal tax	33	0	0
Petty construction and repairs	219	2	0
Miscellaneous	27	13	6
Total ..	1,023	3	3

Rainfall and charactar of the season.—As no rain-guage is kept on the farm yet, correct figures of monthly rainfall cannot be given. It rained heavily during

the month of April which affected adversely the jute and sugarcane crops, but paddy was not much damaged.

Management.—Babu Jogesh Chandra Ray, District Agricultural Officer, was in charge of the farm throughout the year.

Visitors.—The Director of Agriculture, Bengal, Commissioner of the Rajshahi Division, Collector of Dinajpur, Assistant Director of Agriculture, Bengal, Agricultural Chemist to the Government of Bengal, visited the farm. The Deputy Director of Agriculture, Northern Circle, frequently visits the farm.

A. R. MALIK,

Deputy Director of Agriculture,
Northern Circle, Rangpur (Offg.).

APPENDIX XXXVIII.

Annual Report of the Demonstration Farm, St. Andrew's Colonial Homes, Kalimpong, for the year 1925-26.

Introduction.—Situation and history.—Kalimpong, sub-division in the district of Darjeeling, historically known as "Daling" (a Government Estate of 401 sq. miles), was ceded to the British Government after the Bhutanese War of 1864-65. It has a fairly large bazar, and is the mart for the produce of a considerable area, and is also the centre for Tibetan and Bhutanese trade with Bengal.

The demonstration farm is situated about half a mile below the Kalimpong Bazar on south-easterly, which runs down to the Rilli River, a tributory of the Teesta, and is 12 miles from the nearest railway station, Kalimpong Road, which is the terminus station on the Siliguri Teesta-Valley Extension of the Darjeeling-Himalayan Railway.

Area and elevation.—The farm was started with 24 acres of land in 1907 by the Homes with the object of benefiting the local cultivators and also training the Homes' boys, both for the colonies as well as for agricultural work in India. This area has now been increased to a little over 76 acres, of which 12 acres are occupied by roads, labourers' houses and farm buildings, with some waste lands and plots growing trees and bamboos, leaving about 64 acres for cultivation.

The elevation is as follows:—

	Ft.
Lower boundary	3,317
Farm buildings	3,673
Upper boundary	3,864

Irrigation.—The irrigation necessary for the paddy crops is obtained from the natural rainfall, and this consists of turning the water out of the many streams on to the rice terraces when required. For vegetable and fruit culture during the winter and dry seasons, irrigation is arranged through pipes from natural springs around which *pucca* stone vats have been built. These springs are situated in the middle of the farm, and give a consistant supply throughout the year for the whole establishment.

Soil.—The character of the soil is a rich clay loam acid in reaction and short of lime.

Meteorology.—The following table gives the average rainfall for seventeen years and that of 1925 at the farm.

Month and year.	Average rainfall for 17 years.		1925.	
	Rainfall in inches.	Rainy days.	Rainfall in inches.	Rainy days.
January 1925	·32	1	·05	1
February ,, ...	·84	3	....	..
March ,, ...	1·32	4	·10	3
April ,, ...	2·67	9	7·68	15
May ,, ...	5·41	16	3·77	15
June ,, ...	19·17	22	14·81	24
July ,, ...	26·24	27	19·53	26
August ,, ...	19·52	25	23·17	24
September ,, ...	12·74	18	26·79	21
October ,, ...	2·83	5	1·74	7
November ,, ...	·95	1	·09	3
December ,, ...	·36	1	·01	1
Total ..	92·37	132	97·74	140
January 1926	....	....	1·50	....
February ,, ...	....	....	·45	....
March ,, ...	....	....	·41	....

The rainfall registered during 1925-26 as will be judged from the above figures was unevenly divided notably during September 1925, when we registered 26.79 inches of rain, which is the highest recorded on the farm since 1907. In consequence, our paddy and *marwa* crops suffered, as during this month, these two cereal crops come into blossom and require little rainfall.

The secondary and other crops did fairly well as their requirements were more or less provided for by the moisture retained due to September's abnormal record.

Operations during the year.

General crops grown.—The following table gives the area under each crop grown by the farm, and on the half crop system, with the total outturn yield per acre, cost of cultivation, price per maund (82 lbs.) and total value of crops —

Crops.	Area in acres.	Outturn in lbs.	Yield per acres in lbs.	Cost of cultivation per acre.	Price per md. of 82 lbs.	Value of crops.	Grand Total.
				Rs. A.	Rs. A.	Rs. A. P.	Rs. A. P
Maize	32·00	54,530	1,704	....	5 8	3,325 0 0	3,325 0 0
Paddy, *aman dhan* ..	17·00	15,036	884	57 0	4 4	733 8 0	....
„ Straw ..	..	42,230	2,483	..	1 0	515 0 0	1,248 8 0
Kodo, Marwa ..	9·00	9,860	1,095	60 4	4 8	551 2 0	....
„ „ half crop	..	4,335	482	Nil	4 8	237 15 0	789 1 0
Ghaiya, aus paddy ..	·50	235	470	51 0	4 0	11 8 0	....
„ „ Straw ..	..	2,050	4,100	..	0 8	12 8 0	24 0 0
Wheat ..	2 00	2,800	1,400	48 0	8 0	273 3 0	273 3 0
Barley	1·00	676	676	37 8	6 0	49 8 0	49 8 0
Bhatmas, Soybeans	5·50	1,670	302	34 4	6 8	132 4 0	132 4 0
Dal, Kalai ..	3·00	1,107	369	25 8	6 0	81 0 0	81 0 0
Mashyem dal ..	1·00	256	256	21 8	6 0	18 12 0	18 12 0
Buckwheat ..	1·00	471	471	23 0	5 0	28 12 0	28 12 0
Sugarcane or *gur* ..	1·50	6,913	4,608	161 13	12 0	1,011 12 0	1,011 12 0
Arrowroot ..	·25	153	612	202 0	50 0	95 10 0	95 10 0
Cardamom ..	·10	41	410	38 0	45 0	22 8 0	22 8 0
Thatch grass (*khar*)..	1·75	24,518	14,008	21 0	0 8	149 8 0	149 8 0
Fruit culture ..	6·75	..	..	60 8	....	1,989 15 9	1,989 15 9
Vegetable culture ..	2·25	..	..	303 0	....	1,585 9 9	1,585 9 9

From the above figures, it is evident that maize and *marwa* (crow's foot millet) in rotation are economically the most profitable crops for these hill sides, *Marwa*, buckwheat, soy-beans and various kind of pulses are grown after maize on the same land in one year; but none of the latter named crops is so popular as *marwa*. *Ghaiya* or *aus*, autumn paddy, does well on open slopes when sown in rows. *Aman* winter paddy is also cultivated on a profitable scale, and good results can always be expected if a sufficient supply of water from the *jhoras* is constantly diverted into the paddy areas till the second week of October. The other crops, such as, *kalai dal*, soy-beans, *Mashyem* and various kinds of pulses and buckwheat, etc., give unsatisfactory results, and are not encouraging. Sugarcane for the manufacture of *gur* as well as for chewing purpose, wheat, barley and oats sown in rotation, soon after the paddy crop has been harvested by the end of November or early in December, and where there are facilities for irrigating these crops

once or twice, are proving a great success; also arrowroot, fruit and vegetable culture are very profitable, and these are receiving special attention.

Experimental work.—

(*i*) Primary —

1. Maize.
2. Paddy (autumn and winter).

(*ii*) Secondary —

3. *Marwa* (crow's foot millet).
4. Buckwheat, barley, wheat and oats.
5. Soybeans and *dals* (pulses).
6. Potatoes.

(*iii*) Miscellaneous.—

Sugar cane, arrowroot, cardamom, ginger, fruit and vegetable culture, etc.

1. *Maize* (*Zea mays*), *makai, bhutta.*—Since 1907-08 experiments have been carried on year after year on this farm with a view to improving the quality of the maize and to retaining a few selected and true-to-type varieties, which are likely to give good results everywhere and at various altitude in the district. After many years of experiments and special attention devoted to this work, we have on the farm six varieties, *i.e.*, yellow round, yellow flat, white round, white flat, red round and Sutton's giant. These six varieties have been grown on extensive areas, and we find the seeds are very true-to-type and heavy yielders. Special attention is paid annually to the selection of our maize for seed purpose, whereby absolute true-to-type seed is obtained.

The average outturn of maize on 12 acres of these six varieties under experimental cultivation for the past seven years is given below :—

	lbs.
1919-20	2,498
1920-21	2,101
1921-22	2,439
1922-23	2,480
1923-24	2,080
1924-25	2,113
1925-26	2,445

The above figures speak for themselves due chiefly to the careful selection and preservation of seeds undertaken annually. Seeds were sown at the rate of 30 lbs. per acre between the third and fourth weeks of March, and manure applied at the rate of 75 maunds per acre; in addition an application of 10 maunds of lime per acre was also applied this year under report. The crop was harvested during the last week in August and first week in September.

(*a*) **Varieties.**—The variety experiment has given the following results for the past seven years :—

Variety Experiment.

Varieties.	Outturn per acre in lbs.						
	1919.	1920.	1921.	1922.	1923.	1924.	1925.
Yellow round	2,449	2,070	2,275	2,685	2,110	1,927	2,337
„ flat	2,736	2,275	2,367	2,255	1,906	2,162	2,449
White round	2,398	2,654	2,420	2,449	2,070	1,988	2,193
„ flat	2,839	2,470	2,665	2,644	2,255	2,337	2,511
Red round	2,777	1,783	2,183	2,112	1,841	1,988	2,357
Sutton's giant	2,060	1,906	2,420	2,410	2,070	2,244	2,380

These figures are from one acre plots, and the figures (backed) by the average from the farm require no comment.

The yellow and white round maize are more extensively cultivated than the other named varieties, due chiefly to their being very hardy in growth and heavy yielders; at the same time there is an ever ready market for its sale. The red round variety, although a heavy yielder, is not much cultivated as a distinct variety in the district. The yellow flat and white flat varieties, also Sutton's giant, in spite of these being heavy yielders, are not extensively cultivated on account of their being very accessable to mildewness and to weevils, due to their sheath being open too much at the thin end of the cob, thereby preventing storage for a considerable time.

(*b*) **Effect of terracing.**—To compare the results of growing ordinary crops (not irrigated paddy) on terraced and unterraced land, two acres were selected as uniform in fertility and slope as was possible to find on the farm, each plot receiving similar treatment, equal amount of manure and seeds being applied.

The following table shows the outturn and cost of cultivation of maize and secondary crops for the last seven years:—

Crops.		Terraced per acre.		Unterraced per acre.	
		Outturn in lbs.	Cost of cultivation.	Outturn in lbs.	Cost of cultivation.
			Rs A.		Rs. A.
1919-20	Maize ..	2,900	38 0	2,593	38 0
	Soybeans ..	381	26 0	410	26 0
1920-21	Maize ..	2,716	41 10	2,385	41 6
	Marwa ..	1,855	57 2	1,998	57 2
1921-22	Maize ..	1,695	42 0	2,439	42 0
	Dal kalai ..	574	31 8	471	31 8
1922-23	Maize ..	2,685	42 6	2,511	42 6
	Buckwheat ..	145	16 0	111	16 0
1923-24	Maize ..	2,275	43 14	2,193	43 14
	Soybeans ..	307	26 8	284	26 8
1924-25	Maize ..	2,398	39 14	2,306	39 14
	Marwa ..	1,874	60 8	1,732	59 12
1925-26	Maize ..	2,593	64 8	2,408	64 8
	Dal kalai ..	399	25 8	369	25 0

After 15 years experiments on these two acres, we find that during the past nine years the terraced acre has shown a marked improvement over the unterraced in the main crops. The average yield of maize being 2,609 lbs. against 2,405,

or difference of 2 mds. 20 srs. The secondary crops did better on the unterraced area in the first few years, now the result has again been reversed in the past five years. The indications are, therefore, as would be expected, all in favour of terracing.

This terracing experiment having proved such a success on the farm, we have terraced no less than 15 acres of land within the past six years, and are urging the local cultivators to follow our example as far as possible on their heavy sloped areas.

(*c*) **Manurial Experiments.**—Various manurial experiments with farm-yard and artificial manures were carried out on half acre plots on the farm with maize for a number of years on unterraced areas; but these were discontinued as no material benefits or definite figures could be obtained due chiefly to the occasional heavy rainfall, which practically washed away the manures applied. To undertake these manurial experiments on terraced areas were found unsatisfactory as suitable areas of uniformity in every respect were not found on the farm.

Our chief manure is mule dung, and this we have been applying for the past five years at 75 maunds per acre as compared with 100 to 250 maunds per acre seven or eight years ago. This manure could be had for the mere asking, now we have to purchase same at no less 2 to 3 annas a maund, and thus we have much difficulty in procuring, as the local cultivators living within 5 miles of Kalimpong town knowing the full benefits of manuring their holdings, one and all purchase or collect all the manure they can lay their hands on throughout the year.

2. **Paddy (Oryza sativa)—Transplanted winter paddy (aman dhan).**—Owing to the proximity of this farm to the hill ridge, there is no catchment for water, and the crop in consequence is almost entirely dependent on the incidence of rainfall during the months of its growth.

The seed beds are sown by the third week in May, and transplanting commences by the end of June and is completed by the end of July. The harvesting takes place soon after the first week of November and continued to the end of the month.

During the year under report, three different kinds of experiments have been conducted with paddy, *viz.*—(*a*) elevation, (*b*) variety, and (*c*) manurial.

(*a*) **Elevation.**—This experiment with the *touli* variety of paddy has been undertaken since 1915-16 in order to indicate at what altitude paddy would do best on the farm and the surrounding hill sides.

Elevation experiment.

Serial No.	Area in acres.	Approximate elevation.	Variety.	Yield per acre in lbs.	Cost of cultivation per acre.
					Rs. A. P.
1	5·75	3,317—3,550	*Touli* ..	1,441 G 2,578 S	53 14 9
2	3·00	3,600—3,650	*Do* ..	505 G 2,250 S	51 14 0
3	2·33	3,500—3,700	*Do.* ..	520 G 2,730 S	53 6 6

During the past eleven years of this experiment, it has been definitely proved that the lower elevation area has always yielded the best results.

(*b*) **Variety test.**—The following table shows the figures obtained for the last six years in connection with this experiment:—

Variety experiment.

Variety.	1920-21.		1921-22.		1922-23.		1923-24.		1924-25.	
	Grain.	Straw.	Grain.	Straw.	Grain.	Straw.	Grain.	Straw.	Grain.	Straw.
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
Touli	738	1,968	710	1,778	1,489	2,540	1,352	2,868	1,148	2,706
Danase	697	2,378	538	2,060	1,025	2,510	1,188	2,786	1,066	2,993
Mansara	697	1,804	621	1,658	1,389	2,464	1,558	2,809	1,476	2,665
Timbure	410	1,640	328	1,441	1,204	2,132	1,435	2,542	1,353	2,788
Ratomarshi	1,076	2,460	944	1,792	1,199	2,360	1,517	2,542	1,722	2,788
Ramtulsi	451	1,763	408	1,528	1,066	2,608	1,066	3,186	1,025	3,444

	1925-26.	
	Grain.	Straw.
	lbs.	lbs.
Touli	943	2,065
Danase	697	3,034
Mansara	1,025	2,173
Timbure	779	2,665
Ratomarshi	1,189	2,542
Ramtulsi	738	3,321

From the above figures Ratomarshi, it will be noticed, has yielded the best results on an average. Some varieties require plenty of irrigation and ripen earlier, while others do not, and when the rainfall is heavy or light, as the case may be, the varieties either suffer or give good outturn. On the whole, *touli* seems to be slightly the best, and has many advantages, as it has been proved to be drought-resisting, at the same time can withstand excessive rainfall; hence this variety is cultivated chiefly on the farm and grows at high and low altitudes practically alike.

(*c*) **Manurial test.**—During the past 16 years an experiment has been conducted to note the effects of green manuring as compared with farm-yard manure, and an unmanured plot with the touli variety of paddy. The results of the last five years are here recorded.

Manurial experiment outturn per acre.

Particulars.	1921-22.		1922-23.		1923-24.		1924-25.		1925-26.	
	Grain.	Straw.	Grain.	Straw.	Grain.	Straw.	Grain.	Straw.	Grain.	Straw.
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
1. Unmanured	649	2,671	805	2,986	1,100	2,800	799	2,824	526	2,856
2. 4,100 lbs. farm-yard manure	906	2,515	869	2,583	1,200	2,245	867	3,135	649	3,167
3. Green manure (soybeans) ..	1,180	2,609	1,209	3,075	1,300	3,075	839	2,671	682	2,886

From these figures it will be seen that the farm-yard and the green manured areas have yielded the best results, but on considering the expenses incurred for green-manuring and the application of farm yard manure, it will be found that it is more profitable to cultivate paddy unmanured as the expenses incurred for

the application of such manures cover more than the value of the extra yield one receives. It is not the practice to manure paddy areas on these hill sides, as the washings, etc., from above reach the fields from the *jhoras*.

Practically all the paddy areas on the farm have yielded very unsatisfactory results this year due to the excessive rainfall during the latter part of September, while the crop was in full blossom.

(2) (*b*) **Oryza Sativa—Autumn paddy—Aus dhan or Ghaiya (unirrigated paddy).**—This crop is usually sown broadcast on slopes thoroughly exposed to wind, air and well drained. On the farm it has always been sown in rows of 18 inches and seeds dibbled in at 8 inches apart; but for the past five years two and a half acres plots lying side by side, were cultivated with this crop to test the yields of drill and broadcast systems of sowings and the following are the results:—

Method of Cultivation (18" × 8").

Year.	Drill.			Broadcast.		
	Variety.	Yield in lb. per acre.	Cost of cultivation per acre.	Yield in lb per acre.	Cost of cultivation per acre.
1921	Grain	1,086	48 8	738	50 8
	Straw	5,330		4,141	
1922	Grain	920	34 12	704	37 4
	Straw	2,624		2,296	
1923	Grain	368	35 8	204	38 12
	Straw	2,296		2,214	
1924	Grain	1,015	48 2	963	50 6
	Straw	4,005		3,857	
1925	Grain	471	50 8	420	51 8
	Straw	4,100		3,650	

The drill system has given the best results of the two, and we find the cost of cultivation in the broadcast area more expensive; this is due to the difficulty experienced in hoeing and weeding in amongst the crop. The disadvantages against this crop is that it sheds very heavily at the time of harvesting, also the strong winds in August yearly blows the crop in places flat on the ground, consequently its poor result.

As no practical good has been achieved by growing this paddy and adopting the various methods of cultivation for experimental purpose, we have decided to discontinue its cultivation in future.

(3) **Elusine Coracana—Millet (crow's foot)—Marwa.**—This crop grows in rotation with maize, and is transplanted from the third week in June to the end of July; so that when the maize is harvested in August, the *marwa* covers the land, having well developed in the interval.

The following table shows the average outturn per acre from 1920 to 1925 for 6 acres of land under *marwa* cultivation by the farm:—

	Rs
1920	1,980
1921	1,947
1922	1,717
1923	1,798
1924	1,091
1925	1,598

During the past eleven years an experiment has been conducted to test the yields of the two most extensively cultivated varieties of *marwa*, *i.e.*, the curly closed and the open loose-headed types, and the results obtained for the past six years are as follows:—

Marwa variety experiment.

Year.	Variety.	Area in acres.	Outturn.	Cost of cultivation.	Value of crop.
			lbs.	Rs. A.	Rs. A. P.
1920-21	Curly closed ..	1	1,998	57 6	91 6 6
	Open loose ..	1	1,962	57 6	89 12 3
1921-22	Curly closed ..	1	1,855	62 0	106 13 0
	Open loose ..	1	2,039	62 12	116 15 0
1922-23	Curly closed ..	1	1,599	61 6	92 12 0
	Open loose ..	1	1,835	61 6	105 11 0
1923-24	Curly closed ..	1	1,732	60 8	78 15 0
	Open loose ..	1	1,875	60 8	85 1 0
1924-25	Curly closed ..	1	1,640	59 12	85 0 0
	Open loose ..	1	1,742	59 12	90 0 0
1925-26	Curly closed ..	1	1,250	60 4	73 10 0
	Open loose ..	1	1,342	60 4	78 11 0

The open loose variety has always given the best results of the two, averaging 125 lbs. more per acre in spite of its shedding a good deal of its grain at the time of harvesting. The straw is estimated at Rs. 5 per acre, and this is used for grazing. The grains were sold this year at Rs. 4-8 per maund.

Special seed selection work is still in progress with the help and guidance of Dr. Hector, Economic Botanist, Bengal, and the cultivation of these true-to-type selected lines of *marwa* is so far as possible being carried out carefully in the manner laid down by him.

This crop is chiefly cultivated in rotation after maize, and the grains are used more for the manufacture of local beer than as a food crop in this district.

(4) (*a*) **Buckwheat—Fagopyram Esculentum—Phapar**—Is a rotation crop grown after maize. Seed is sown in the beginning of September, and is ready for harvesting by the end of November. An acre plot was sown with this crop this year under report in rotation after maize, and an outturn of 942 lbs. was obtained at a cost of Rs. 23.

Buckwheat as a general crop has never paid its way on the farm, considering this, as well as the other drawbacks of this crop, chiefly, its exhaustive nature of depriving the soil of a greater portion of its plant food for its growth. We have therefore decided to grow buckwheat only on small areas simply for supply of seeds. No success have been achieved with this crop, and there seems to be no ways of improving its yielding qualities.

(4) (*b*) **Wheat—Triticum vulgare—Gehun.**—In 1924-25 two acres of paddy land in rotation after winter paddy was again cultivated with two varieties of wheat. Pusa No. 12 and Rajshahi red hard wheat seeds. During the second week of December seeds were sown after the land had been thoroughly ploughed and

cleaned; two irrigations were given, one in January and the second in March; and the crop was harvested by the end of April 1925.

Their respective yields were, Pusa No. 12, 1,230 lbs. and Rajshahi red hard wheat 1,507 lbs. per acre. The Rajshahi red hard wheat has always yielded the best result, and as it keeps well and is not easily attacked by weevils, the cultivators in the Darjeeling district prefer it to the Pusa variety. Where there is any scope for one or two irrigations, wheat can be grown with success after the paddy crop has been harvested.

(4) (*c*) **Barley—Hordeum vulgare—Jau.**—One acre of land in rotation after winter paddy was cultivated with a local variety of barley, and was treated practically the same as wheat, and the result obtained was 676 lbs. at a cost of Rs. 37. Like wheat, barley also needs one or two irrigations if sown in paddy fields after the winter paddy has been harvested.

(5) (*a*) **Leguminous crops—Soy-beans, Glysine hispida—Bhatmas.**—The following varieties were grown on the farm on 1 acre plots, and figures for the past four years are:—

Serial No.	Variety.	Area in acre.	1922-23 Grains.	1923-24 Grains.	1924-25 Grains.	1925-26 Grains.	Remarks.
		lbs.	lbs.	lbs.	lbs.	lbs.	
1	Nepali ..	1	194	820	676	1,640	Whole season crop grown alone.
2	Barmali ..	1	471	492	369	297	
3	White ..	1	61	517	379	248	Grown in roattion with maize.
4	Green ..	1	471	141	359	269	
5	Chocolate ..	1	266	307	533	377	
6	Black ..	1	176	284	533	365	

The first three varieties are erect growing, while the last three mentioned are of trailing habits.

All these six varieties of soy-beans can be grown in rotation with maize. Nepali Bhatmas produces very little when grown along with maize, but when grown alone on an open slope, yields heavily. The crop cannot however compete with maize or *marwa* for profit. The cost of cultivation of these crops was Rs. 26 per acre, except the Nepali variety which, when grown alone, cost Rs. 46 per acre. The value of the Nepali soy-beans was Rs. 8 per maund (82 lbs.) and of the varieties at Rs. 6 per maund.

Soy-beans as a rule does not pay, and its cultivation is only continued annually simply for the supply of seeds.

(*b*) **Kalai dal—Phaseolus Mungo**—An area of two acres were cultivated with this *dal*, and an outturn of 384 lbs. per acre was obtained. There is a great market for this *dal*, and the prices usually varies from Rs. 6 to Rs. 8 per maund. The cultivators usually sow the crop as well as soy-beans on the ridges or *ails* of paddy fields.

(*c*) **Phaseolus-Calcaratus—Phaseolus sublobatus—Mashyem dal.**—Three varieties of this local *dal* was cultivated on quarter acre plots, and the following results were obtained this year under report:—

(1) *Bagay* (speckled) *mashyem* .. .. 268 lbs. per acre.
(2) Gurashey *mashyem* .. .. .. 195 „ „ „
(3) Saito (white) *mashyem* .. .. .. 168 „ „ „

This crop produces heavy foliage, and is being recommended as a green-manure for various crops, chiefly tea, in this district. Like all other leguminous crops grown in rotation after maize, *mashyem* is also cultivated at a loss to this farm.

(6) (*a*) **Sugarcane—Saccharum Officinarum—Ukhu.**—This crop takes 18 months to mature on these hills as compared with ten months on the plains. In April 1916 a terraced area of 0·50 was planted with this crop, and since then has been increased to 1·50 acres. An outturn of 6,744 lbs. or 4,495 lbs. per acre of *gur* was manufactured at a cost of Rs. 161-13-3, and this was sold at Rs. 12 per maund. A clear profit of Rs. 496-2-9 per acre is obtained after paying all expenses.

The crop was exceptionally good this year as during the two previous years the majority of old ratooned shoots were dug out and thrown away and replanted with new shoots.

The cultivation of sugarcane is the most profitable crop on the hill either for manufacture of *gur* or for chewing purpose. The crop grows with great success when ratooned, consequently the cultivation expenses are less on the hills.

The local light yellow, also the Dacca yellow *tanna* varieties, which were grown on quarter acre plots, have proved a failure, and from these areas an outturn of 169 lbs. of *gur* at a cost of Rs. 70-8 was obtained. As these two varieties have not succeeded with us, their cultivation in the future will be discontinued.

(*b*) **Arrowroot—Maranta Arundinacia.**—An area of 0·25 acre was planted with this crop in April 1925, and tubers were harvested and arrowroot manufactured together in February 1926. An outturn of 153 lbs. or 612 lbs. was obtained at a cost of Rs. 50-8 or Rs. 202 per acre; while the value of the crop was Rs. 95-10 or Rs. 382-8 per acre. This is another very profitable crop, and the only drawback is to get sale for all the arrowroot manufactured.

(*c*) **Fruit culture.**—For this section of our work, we have set aside an area of 6·50 acres (of which 3.02 acres is under the Darjeeling Improvement Fund) for the supply of graftings, cuttings, etc., to the cultivators in the district at a very nominal cost. Here we have various kinds of fruit trees—tropical and sub-tropical —under experimental cultivation. English fruit trees were tried, but with no success, due to the fact that our elevation being rather low, has a southern aspect, no frost and too much rain.

Careful experimental work is being carried on to improve the existing quality of the local oranges by propagating same by means of budding on sour limes, etc.

Pine-apples.—An area under this fruit is always kept going for supply of suckers as the annual demand for same from all parts of India is very great. A good return is also realised from sale of pine-apple fruits as the Queen is noted for its delicious flavour, sweetness and size. Besides the Queen, we are introducing the thornless and other varieties, and these are at present in the experimental stage.

From sale of fruits and fruit trees, including pine-apple suckers from the farm nursery, a sum of Rs. 1,989-15-9 has been realised at a cost of Rs. 408 giving us a substantial profit of Rs. 1,581-15-9 or Rs. 234-5-9 per acre.

(*d*) **Vegetable cultivation.**—During the year under report, 2.25 acres were again placed under vegetable culture; and practically all varieties of foreign and Indian vegetables were tried in their respective seasons. Everything has been grown with more or less success, and a sum of Rs. 1,585-8-9 was received as sale-proceeds from vegetables. The cultivation expenses, including the price of seeds and cost of manures applied for the 2.25 acres, was Rs. 681-12, thus yielding a profit of Rs. 303 per acre.

Our chief market has always been Kalimpong, although a large quantity of various kinds of vegetables was sent to the Teesta Bridge Bazar in the winter months.

Our main object in taking up this class of cultivation on the farm is to introduce it amongst the raiyats of the Government Estate, and make it the centre for rearing seedlings for issue to the local cultivators, and to put them in the way of exporting their produce to Calcutta at suitable times as well as to provide for the needs of the coming hill station.

(*e*) **Cardamom—Ammomum sublatum—Thulo Alaichi.**—An area of about 0.10 acre was planted out with two varieties of cardamom in May, 1921, and this year under report an outturn of 40 lbs. of cardamom was harvested at a cost of Rs. 9-8; the crop was sold at Rs. 45 per maund.

It may be noted here that cardamom is grown extensively on the hills in the shady and wet corners, and close to *jhoras* or springs for its irrigation, as it is one of the most essential thing cardamom requires for its growth.

The local market rate for cardamom on 31st March 1926 was Rs. 95 per maund.

Distribution of seeds.—The following list of seeds, etc., were distributed during the year 1925-26:—

1.	Maize seeds	4,607 lbs.
2.	Paddy ,, ...	6 ,,
3.	*Marwa* ,, ...	6 ,,
4.	Buckwheat ,, ...	84 ,,
5.	Wheat ,, ...	1,271 ,,
6.	Soybeans ,, ...	1,082 ,,
7.	*Mashyema* ,, ...	229 ,,
8.	*Dal kalai* ,, ...	6 ,,
9.	Barley ,, ...	83 ,,
10.	Potatoes tubers	5,740 ,,
11.	Sugarcane rooted and unrooted cuttings ..	1,800 nos.

Vegetables seeds and seedlings.

1.	Cabbage seedlings	1,775 nos.
2.	,, seeds	1 oz.
3.	Cauliflower seedlings	8,495 nos.
4.	,, seeds	12 lbs.
5.	Knol khol seedlings	700 nos.
6.	Celery ,, ...	5 ,,
7.	Tomato ,, ...	1,212 ,,
8.	Sikkim pea seeds	101 lbs.
9.	Bean seeds	1½ ,,
10.	Spinach seedlings	20 nos.
11.	Spinach and various kinds of rainy weather seeds ..	48 packe
12.	Jerusalem Artichoke tubers	4 lbs.

Fruit trees.

1.	Orange seedlings and Gaoties	482 nos.
2.	Limes and lemons	50 ,,
3.	Malta blood and sweet lime, also naval orange "budded" trees.	193 ,,
4.	Pear cuttings	58 ,,
5.	Peaches	6 ,,
6.	Banana hooks.	468 ,,
7.	Pine-apple suckers	13,644 ,,
8.	Papaya seedlings	1,024 ,,
9.	,, seeds	2 ozs.
10.	Guava seedlings	18 nos.
11.	Raspberry	24 ,,
12.	Strawberry	1,410 ,,
13.	Tree tomato seedlings	55 ,,
14.	,, ,, seeds	2 ozs.

The above list of fruit trees includes the number supplied from the Darjeeling Improvement Fund's Fruit Nursery, which is situated in the heart of the farm.

(1) **Miscellaneous—Cattle.**—There are six pairs of drought bullocks kept on the farm, and the health of the animals have been satisfactory. A large number of cultivators living within a radius of 2 miles of the farm depend on our cattle to plough their fields for sowing their maize and paddy crops, and a sum of Rs. 98-2 was realised as plough hire during the year.

(2) **Poultry.**—Half an acre of land has been set aside for poultry rearing, and in this area five substantial houses have been erected with long wire-netted runs, and fruit trees planted in rows in these runs to serve the purpose of giving shade for the birds. In the five houses the following strains of birds are kept:—

(*i*) Pure white leghorns.

(*ii*) Pure white leghorn cocks with Sikkim white hens.

(*iii*) Pure white leghorn cocks with country hens.

(*iv*) Chickens of all strains below six months old.

(*v*) Pure Rhode Island reds.

So far we have not attempted rearing our chickens from incubators as we have not the staff, besides we find the local birds as housed in No. 3 house prove to be the best mothers for this purpose.

A sum of Rs. 267-2-9 was realised from sale of poultry and eggs, while the expenses incurred in this connection amount to Rs. 119-14 during the year under report.

We distributed 34 dozens of eggs by sale as well as on the half crop system for setting purpose of both white leghorn and Wyandotte and Rhode Island reds, also 68 chickens of over six months and 21 cocks and hens over a year old of the above named strains were supplied all over for improvement purpose. About 268 chickens were reared on the farm this year, but we lost majority due to hawks, crows, wild cats and jackals carrying them off in spite of our deligent surveillance.

We have been very fortunate this year with no poultry diseases prevailing amongst our birds, and only lost four birds due to old age.

Practical training.—Lectures and practical demonstrations are given at various seasons of the year to the cultivators living within a radius of 5 miles of the farm, in connection with selection and preservation of maize seeds, manufacture of *gur* and arrowroot, fruit and vegetable culture, and instructions on practical entomology and mycology. In addition we always have one or two educated hillmen under training to work as agricultural sub-overseers for introduction on agricultural improvements in the Khas Mahals of Darjeeling district or for employment elsewhere, such as in the forest, tea and other departments.

Demonstration work.—The work started during 1920-21 in four demonstration centres in the Kalimpong sub-division have been continued during the year under report, and satisfactory practical results have been accomplished with general agricultural crops, fruit, vegetable culture and conservation of farm-yard manure in covered pits, etc. A separate report on this as well as of the whole district work has also been submitted.

Kalimpong Mela.—At the Kalimpong Agricultural and Industrial Exhibition held from 2nd to 5th December 1925 the farm had a special shed built at its own expense where products from the general Agricultural, Horticultural and Poultry sections were exhibited. Lectures were delivered and practical demonstrations with various implements, such as maize shellers, winnowers, etc., besides the manufacture of *gur* and arrowroot, were undertaken which appeared to be appreciated by the general public.

Visits and inspection.—The Hon'ble Sir Hugh Stephenson, K.C.I.E., C.S.I., I.C.S., Member of Council, the Hon'ble Mr. K. C. De, I.C.S., C.I.E., Member of Board of Revenue, J. N. Gupta, Esq., I.C.S., Officiating Member of Board of Revenue, Rai J. N. Mitra Bahadur, Registrar of Co-operative Societies, Bengal, visited the farm during the year under report.

Establishment and management.—I was the Manager in charge during the year. The land for the farm was bought by the St. Andrew's Colonial Homes and is subjected to an annual rental of Rs. 83-12. The farm is managed by the

Homes, and the Bengal Agricultural Department's grant of Rs. 5,000 *plus* half sale-proceeds is not sufficient to meet the working expenses and the upkeep of the farm. The remainder of the sale-proceeds is credited to the Homes.

The programme of work for this farm is drawn up with the help and sanction of the Bengal Agricultural Department.

A copy of the balance sheet for the year ending 31st March 1926 is given below :—

Receipts.	Amount.			Expenditure.	Total amount.		
	Rs.	A.	P.		Rs.	A.	P.
Balance in hand from 1924-25.	0	1	8	Labour ..	7,753	13	9
				Superintendence ..	4,857	8	0
Government grant ..	6,985	0	0		12,611	5	9
Sale of farm produce ..	10,839	0	3				
Miscellaneous receipts ..	923	2	3	Miscellaneous purchase .. of seeds, manures, repairs	2,874	8	9
Loan from Homes for working expenses.	4,775	0	0	Half crop to Homes ..	5,419	8	0
				Insurance policy of renewal	31	10	0
				Refund in part of loan borrowed from the Homes ..	2,585	0	0
				Balance in hand ..	0	3	8
Total ..	23,522	4	2	Total ..	23,522	4	2

The total value of produce sold shows an increase of Rs. 78-14 as compared with that of last year, realised chiefly from sale of maize, *gur*, straw and vegetables; while the receipts from sale of *marwa*, paddy, fruits and miscellaneous grains had fallen due to bad harvest.

After defraying all expenses for the working of the farm from the Government grant of Rs. 6,985 *plus* Rs. 5,419-8 as the farm's half share of sale-proceeds, also Rs. 923-2-3 from miscellaneous incidental receipts, such as from poultry, plough hire, etc., etc., the farm had to borrow a sum of Rs. 2,190 in excess this year under report, thus bringing the total due to the Homes for extra working expenses for the past three years to Rs. 4,478. This excess expenditure is due solely to the high wages paid out to labourers as labour competition was very great on account of the big works undertaken on the roads, etc., by the Public Works Department.

Annual Report of Agricultural Improvement work in the district of Darjeeling for the year 1925-26.

Introduction.—In addition to my duties as Manager, Demonstration Farm, Kalimpong, I was appointed by the Director of Agriculture, Bengal, *vide* his memorandum No. 658-60 T. A./10A-3-22, dated the 18th April 1922, to take charge of the district work, as well as continue with the demonstration work in the four centres in the Kalimpong subdivision.

Staff and charge.—Throughout the year under report, I remained as supervising officer for the district of Darjeeling, and had only the two agricultural sub-overseers and one peon working under my orders and instructions in the Kalimpong subdivision; besides these, there was no one employed in the other subdivisions of the district.

Tours.—My tours as usual were arranged in such a manner that my chief work on the demonstration farm, Kalimpong, did not suffer. Such being the case, it was impossible for me to draw up a tour programme monthly and follow it strictly. I had to take my chance at every slack moment, and leave the farm when convenient to do any extensive touring. The real reason being, there is no one employed on the farm to whom such trust and responsibility can be placed during my absence; unless my wife is at home who more or less sees to the working. So far things have worked very smoothly for the past six years, and to adopt any hard and fast rule regarding submission of tour programme, and following the same strictly, will only be a hinderance than a help. My tours are divided in two sections in connection with the whole district—

(1) For inspection and supervision of work carried on in the four demonstration centres, and adjoining blocks in the Khas Mahal of Kalimpong subdivision, I was given a fixed travelling allowance on condition I devote 100 days of touring on this work yearly. This year I spent 97 days in and around these four centres, and about 12 days were spent within a radius of 5 miles of the demonstration farm inspecting cultivators, and Development Area Garden lease-holder's lands and crops, and giving them necessary instructions.

(2) For inspection and supervision of work undertaken in the Siliguri subdivision, Forest Tangya cultivation area, and demonstrations carried on by private individuals in the Kurseong and Darjeeling Sadar subdivisions I spent 41 days.

The following places of importance were visited by me during the year under report:—

Siliguri subdivision.—Siliguri, Matigarh, Sukna, Golaghat, Bagdogra, Naxalbari, Khoribari, Adhikari, Bangdhubi, Batasi and Phansidewa.

Kurseong subdivision.—Kurseong, Dow Hill, Panighatta, Toong, Dilaram, Sonada and Mangpoo.

Darjeeling Sadar subdivision.—Darjeeling, Ghum, Sukhia-Pokhri, Takdha, Lepchu and Peshok.

Kalimpong subdivision is omitted as a detailed report of work carried on in this subdivision is submitted separately.

Work accomplished.—Good work has been done in the Kalimpong subdivision and in the four centres with various approved seeds—sugarcane cultivation for *gur* manufacture, cultivation of fruits and vegetables, conservation of farmyard manure in covered pit, etc.

In the Siliguri subdivision, in spite of there being no subordinate agricultural officers stationed in the subdivision, we have, through the kind help of Mr. Hollow, late Subdivisional Officer, Siliguri, Mr. Field, Manager, Landale and Clark Ltd. Jute Concern, Siliguri, and Mr. Bhattacharjee, late Second Officer and Khas Mahal Manager, Siliguri subdivision, distributed 6 maunds of approved jute seeds, and 5 maunds of Pusa No. 12 and Rajshahi red hard wheat seeds, also 2½ maunds of Dacca mustard seeds to large numbers of cultivators for demonstration purpose.

The undermentioned is the list of names of all the cultivators to whom jute seeds were distributed through Mr. Field, Siliguri :—

Serial No.	Name of cultivator.	Place of residence.	Quantity of seeds sown.	Approximate area in acres.
			Sr.	
1	B. A. Hollow, Esq. ..	Siliguri ..	5	1¼
2	Kharga Narayan Sing ..	Panighatta ..	2	½
3	Babula Sing	Ditto ..	2	½
4	Senia Saikh	Ditto ..	2	½
5	Simnatu Roy	Ditto ..	2	½
6	Ijaili	Ditto ..	2	½
7	Dhonraj	Siliguri ..	3	¾
8	Behari Dangndar	Ditto ..	5	1¼
9	Sidhur Mahoto	Ditto ..	3	¾
10	Rahinan Mohoto	Ditto ..	5	1¼
11	Jiblal Muchi	Ditto ..	3	¾
12	Fokan Muchi	Ditto ..	6	1½
13	Tarachand	Dubgram ..	2	½
14	Pran Nath	Ditto ..	3	¾
15	Mungra	Baradumriguri ..	2	½
16	Panchua Mura	Ditto ..	2	½
17	Lesru	Ditto ..	2	½
18	Sutka	Ditto ..	2	½
19	Nendar Mahati	Bhujiabari, Siliguri	2	½
20	Gokul Khewar	Ditto ..	2	½
21	Ajul Singh	Gossaipul, Siliguri	2	½
22	Ramani K. Singh	Ditto ..	2	½
23	Hiraman	Khapalashi, Khoribari.	2	½
24	Pit Khua	Ditto ..	2	½
25	Bankul	Ditto ..	2	½
26	Alok Chand	Ditto ..	2	½
27	Rasik	Dudhajote, Khoribari.	2	½
28	Maharat	Ditto ..	2	½

Serial No.	Name of cultivator.	Place of residence.	Quantity of seeds sown.	Approximate area in acres.
			Sr.	
29	Gossai	Lahasinghjote, Khoribari.	2	½
30	Sani	Ditto ..	2	½
31	Titka	Chottaruon ..	2	½
32	Bojdha	Ditto ..	2	½
33	Joju Majhi	Bararupon ..	2	½
34	Beju Majhi	Ditto ..	3	½
35	Sibnandan	Siliguri ..	3	¾
36	Lalu	Ditto ..	3	¾
37	Dukhan..	Ditto ..	3	¾
38	Bado	Ditto ..	3	¾
39	Bulot	Ditto ..	2	¾
40	Koila Muchi	Ditto ..	2	½
41	Rashamoy Biswas	Ditto ..	2	½
42	Dil Mohammad	Ditto ..	3	¾
43	Ramdan Muchi	Ditto ..	3	¾
44	Ganga Muchi	Ditto ..	2	½
45	Etbani	Ditto ..	2	½
46	Safique	Ditto ..	2	½
47	Onazood	Ditto ..	2	½
48	Debi Sing	Dubgram ..	5	1¼
49	Goyanolu Roy ..	Binnaguri ..	10	2½
50	Khirprasad Sing	Ditto ..	2	½
51	Jonabali	Sonapur ..	5	1¼
52	Badulla Md.	Kumrangaguri ..	4	1
53	Lulu Kuchu	Sontispur ..	5	1¼
54	Foizuddin	Ditto ..	4	1
55	Hridoynatu Roy	Siliguri ..	4	1
56	Inbar Muchi	Ditto ..	2	½
57	Banij Roy	Ditto ..	2	½

Serial No.	Name of cultivator.	Place of residence.	Quantity of seeds sown.	Approximate area in acres.
			Sr.	
58	Hedlu Md.	Old Siliguri ..	4	1
59	Abdul Mohit	Siliguri ..	4	1
60	Begam Md.	Ditto ..	2	½
61	Omanuddin	Ditto ..	4	1
62	Sukur Md.	Ditto ..	2	½
63	Kalu Md.	Ditto ..	1	¼
64	Basaruddin	Ditto ..	1	¼
65	Pana Ali	Koinari ..	1	1
66	Jongu Md.	Dubgram ..	2	½
67	Rafi Kuddin	Ditto ..	2	½
68	Baloo	Siliguri ..	4	1
69	Basir	Ditto ..	2	½
70	Jafar	Jopaguri ..	2	½
71	Bangani	Ditto ..	2	½
72	Asiruddin	Ditto ..	2	½
73	Digal Sing	Ditto ..	2	½
74	Kana Md.	Kamrangaguri ..	2	½
75	Jent Ram	Siliguri ..	1	¼
76	Bascha Saha	Old Siliguri ..	5	1¼
77	Syed Saikh	Siliguri ..	2	½
78	Sedia	Ditto ..	3	¾
79	Mahadu..	Ditto ..	1	¼
80	Johur Ali	Kanigung ..	5	1¼
81	Keramal	Ditto ..	5	1¼
82	Hatur	Ramgunj ..	5	1¼
83	Mahodali	Ditto ..	4	1
84	Murad	Ditto ..	3	¾
85	Abedin	Ditto ..	3	¾

Over 90 per cent. of the persons named above did not keep any of their jute crop for seed purpose, due to their avariciousness for tons of fibre as the market price was very favourable, "the best they have ever had". Those who did

keep some for seed purpose are reaping a two-fold benefit as they have charged from Re. 1-8 to Rs. 2 (in some cases more) for a seer of seed. The crop all over was good, and from Mr. Field's report, I am given to understand that the difference of height and texture of the local jute grown from the cultivators' own seeds, and from those of the Agricultural Department, were marked; the latter fetched greater outturn and better prices. The cultivators being convinced of these facts, that when I was in Siliguri in March, Mr. Field informed me that he had no end of trouble with people coming to him requesting him to supply them with the same kind of jute seeds they received through him last year. As they were quite willing to pay for same, I referred them to the Forest Department and Messrs. Godden & Co., Narayanganj, for their supply.

There is little or no *rabi* crop grown in Siliguri subdivision, due to the cultivators' laziness, also by keeping all the land fallow for each other's cattle to graze on. Many cultivators are only too anxious to grow *rabi* crops; but for fear of their neighbours' cattle destroying same, in spite of the area being fenced in, are reluctant in doing so. Considering this, Mr. Bhattacharjee induced the following list of names of cultivators to grow wheat and mustard seeds for demonstration purpose, and warned the jotedars and panchayets that if any damage to these crops by cattle were reported, they would be severely dealt with. This previous warning has been the saving of practically all these demonstrations, otherwise the poor cultivators would have lost heavily as in previous years, when we tried to introduce *rabi* demonstration which had failed due to cattle grazing down the crop.

1. The wheat demonstrations undertaken with Pusa No. 12 and Rajshahi red hard wheat seeds are as follows:—

Serial No.	Name of cultivator.	Place of residence.	Quantity of seeds sown.	Approximate area in acres.
			Sr.	
1	Bekulsing	Siliguri ..	20	1
2	Md. Ismail Huq	Dhamal Jote, Siliguri	20	1
3	Babu Mangturam Agarwala ..	Tumbajote, Siliguri	20	1
4	Prabod Chandra Sirkar ..	Bangdubi ..	10	½
5	Babu Harasnudar Mazumdar ..	Gyan Jote, Khoribari.	20	1
6	Chain Sing	Padma Jote, Naxalbari.	10	½
7	Anuruddin Md. ..	Rabbhita, Matigarha	20	1
8	Dhusa Sing	Dhanhagur Jote, Adhikari.	20	1
9	Kohim Chowdhury ..	Ambari Phansidawa	20	1
10	Khetra Sing	Rangali Jote, Khoribari.	20	1
11	Lakmi Narayan Mazumdar ..	Sastu Jote, Siliguri	20	1

Details as to the exact outturn harvested from each plot have not been received due to the crop not being quite ready for reaping in many areas.

2. The mustard demonstrations were undertaken by the following named cultivators :—

Serial No.	Name of cultivator.	Place of residence.	Quantity of seeds sown.	Approximate area in acres.
			Sr.	
1	Bekulsing	Siliguri ..	10	1
2	Md. Ismail Huq	Dhamal Jote, Siliguri.	10	1
3	Probodh Ch. Sirkar ..	Bangdubri ..	10	1
4	Anaruddin Md.	Rabbhita Matigarha	10	1
5	Dhusa Sing	Danhaguri Jote, Adhikari.	10	1
6	Kohin Chowdhury	Ambari Phansidawa	10	1
7	Khetra Singh	Rangali Jote, Khoribari.	10	1
8	Lakmi Narayan Mazumdar ..	Sastu Jote, Siliguri	10	1
9	Joy Nanda Sing	Danga Jhar Batasi	10	1
10	Dulal Sing	Bhagibhita Jote, Batasi.	10	1

Both the wheat and mustard crops had grown successfully and the few standing crops I inspected promised good returns.

I may mention here that the general work of agricultural improvements in the Siliguri subdivision is hampered a great deal for want of subordinate officers, and unless we have two agricultural sub-overseers, I am afraid nothing substantial can be expected of me, as I cannot go from village to village, considering I have other more important centres and duties to look to.

The Forest Department work in connection with the Tangya cultivation of jute for seed purpose is continued yearly on newly cleared forest areas, and good seed is annually produced for distribution.

This year under report I was able to pay very little attention to the work carried on in the forest areas owing to difficulties connected with travelling allowance.

In the Kurseong and Darjeeling subdivisions large quantities of maize, wheat and vegetables were supplied to managers of tea estates, also to cultivators, and favourable reports have been received of the yields obtained. Through the help of Messrs. Barratt and Sinclair, we have distributed no less than 6 lbs. of our cauliflower seeds to vegetable growers from Sonada to Darjeeling, and one and all seemed to be pleased with the results obtained from the seeds supplied.

At the Darjeeling Flower Show, which was held on 5th May 1925, the demonstration farm had some space allotted to it, and I had all our grains, besides season's fruits and vegetables exhibited, which was much appreciated by the public. More or less our stall was the centre of attraction, and I was kept very busy explaining and instructing people about the cultivation of the many varieties of seeds, fruits, etc., we had on exhibition.

Large orders were placed at the show for our seeds. Sorry to note that a large number of people, who had lived in the district many years, knew

nothing about the existence of such a farm near their doors growing such grains. etc., to perfection. Hence our object in taking over exhibits to the show which was to convince the public in the district as to what could be grown and to what perfection was accomplished wonderfully.

The Kurseong Flower Show, which received a grant from the Agricultural Department the last year under report, did not keep me informed of their show dates, which were twice changed as I was given to understand through local residents. Years ago, for three years running, the demonstration farm took agricultural seeds and the Department sent manures and implements for exhibition purpose; but I must frankly admit that practically no interest was taken as there were far too many side attractions within that short space of time, *i.e.*, from 9 A.M. to 4 P.M. the show was usually held.

I do not think the Department should encourage the Kurseong Flower Show with a grant as the show is very limited, and the exhibitors are chiefly those who are the organisers of the show.

We have the Darjeeling Flower Show and the Kalimpong *Mela* in the district: through these two shows we can accomplish much good annually.

HENRY R. EDMUNDS,

Superintendent of Agriculture,
Darjeeling, Kalimpong.

APPENDIX XXXIX.

Annual Report of the Sericultural Operations in Bengal for the year 1925-26.

I remained in charge of the sericultural operations throughout the year under report. The jurisdiction of the three Superintendents of Sericulture was revised and the following districts were grouped under the respective circles:—

1st Circle.—Babu Surendra Nath Bose, Superintendent of Sericulture in charge of the districts of Malda, Rajshahi, Murshidabad, Birbhum, Bankura, Midnapore and the sericultural nursery of Rai Kumud Nath Mullick Bahadur at Ranaghat in the district of Nadia with headquarters at Malda.

2nd Circle.—Maulvi Shaikh Abdullah, Superintendent of Sericulture in charge of the districts of Bogra, Darjeeling, Rangpur, Dacca, Mymensingh and Dinajpur with headquarters at Bogra.

3rd Circle.—Miss M. L. Cleghorn, Superintendent of Sericulture in charge of the districts of the 24-Parganas, Nadia (excluding the sericultural nursery of Rai Kumud Nath Mullick Bahadur at Ranaghat), Hooghly, Khulna and Jessore with headquarters at Alipore.

Tours.—The Deputy Director of Sericulture, Bengal, spent 105 days on tour, the 1st Superintendent of Sericulture 182 days and the 2nd Superintendent of Sericulture 66 days.

Government nurseries—1st Circle.—There are at present six central nurseries engaged in the production of seed cocoons for sale to the silk-worm rearers. The total acreage under mulberry is about 150 acres.

Murshidabad district—

Berhampore central nursery.

Kumarpur central nursery.

Malda district—

Piasbari central nursery.

Amriti central nursery.

Rajshahi district—

Mirganj central nursery.

Birbhum district—

Kalitha central nursery.

2nd Circle.—This circle was mainly devoted to the continuance and selection of the *Chotopolu* silk-worms throughout the year at the Bogra and Kurseong sericultural nurseries. The Dacca nursery was engaged in crop-rearing and the Dhanbari operations were confined to the demonstration in the rearing of Eri silk-worms.

3rd Circle.—The rearing work is now being carried on in a rented house at No. 12, Alipore Road, Calcutta, with a total area of 12 bighas under mulberry on rented lands at Alipore, Behala and Tollygunge for sale of seed to rearers and propaganda work.

Review of the seed market.—The seed market was seriously affected owing to the fall in the price of cocoons, consequent on the low market rate of silk yarns. The average price of Government nursery seed cocoons was Rs. 3-4 per *kahon* this year in place of Rs. 4-4 during the previous years. The selected rearers' rates on an average was Rs. 2-12 per *kahon*. The village seeds were sold from Re. 1 to Re. 1-8 per *kahon* in most cases.

In the absence of proper statistics and trade returns for the outturn of cocoons sold in the different markets and also direct to the reelers, it is perhaps safe to estimate the progress of the industry on the basis of the total quantity of seed consumed. The total sale of seeds from the nurseries and selected rearers was more than 37,000 *kahons* during the year under report in place of 32,000 *kahons* in 1924-25. In addition to the sale of these departmental seeds, there has been a heavy sale of village seeds as in previous years. It is evident from the observation of the progress of sale in different markets that there was no falling off in the seed trade. The general impression of this year's

seed market is that the consumption of seeds has been more than in the last two years, although the price has been less.

Sale of microscopically examined and selected seeds to the rearers.—The total receipts from the nurseries from 1st April 1925 to 31st March 1926 were as follows:—

			Rs.	A.	P.
From 20,134 *kahons* seed cocoons ..	..	..	66,371	11	3
From 3,314 *kahons* cocoons ..	..	..	2,878	11	6
From miscellaneous production ..	..	..	1,992	1	3
			71,242	8	0
Add value of interdepartmental supply—					
1,016 *kahons* Nistari seed cocoons	..	..	5,080	1	9
112 *kahons Chotopolu* seed cocoons	..	..	781	13	0
	Total	..	77,104	6	9

Details of sale proceeds of the outturn of each nursery during the year 1925-26 are given below:—

Name of nursery.	Seed cocoons.	Cocoons.	Miscellaneous.	Total sale proceeds.
	K.	K.	Rs. A. P.	Rs. A. P.
Piasbari	6,392	485	675 3 9	25,387 2 6
Nistari stock seed supply	599	....	....	....
Amriti	4,974	112	206 1 6	17,974 11 6
Mirganj	1,093	381	114 14 0	4,098 3 6
Nistari stock seed supply ..	212	....	....	....
Kalitha	1,725	423	90 14 0	4,552 1 6
Berhampore ..	3,475	908	339 8 9	11,542 2 9
Nistari stock seed supply ..	205	....	....	....
Kumarpur ..	2,218	818	51 10 6	6,484 2 6
Alipore	27	2	19 2 0	83 9 0
Bogra	47	79	....	171 9 6
Chotopolu stock seed supply ..	37	....	....	....
Dacca	118	36	3 12 0	262 14 6
Kurseong ..	65	70	27 0 0	222 0 0
Chotopolu stock seed supply ..	75	....	....	....
Malda Sulphur Godown	....	....	463 14 9	463 14 9
Total ..	21,262	3,314	1,992 1 3	71,242 8 0

The total expenditure incurred for the sericultural operations from 1st April 1925 to 31st March 1926 is submitted below:—

Details.	1925-26. Rs.	A.	P.
Salary of Deputy Director of Sericulture, Bengal ..	7,648	6	0
Salary of three Superintendents of Sericulture	11,578	11	0
Pay of permanent establishment	21,882	6	0
Pay of temporary establishment	17,422	11	0
Travelling allowance	11,518	14	0
Rents, rates and taxes	10,107	10	5
Stipends	331	9	6
Rewards	1,300	0	0
Petty construction and repairs	16,591	9	3
Purchase of seeds and implements	4,989	11	0
Books and periodicals	196	12	0
Rearing and cultivation (including demonstration grant of Rs. 3,200)	86,599	9	6
Disinfection	7,198	3	9
Office expenses and miscellaneous	11,284	15	0
Exhibition and fairs	87	5	0
Total ..	2,08,738	5	5
Sericulture (Reserve)—*Kurseong Nursery*—			
Pay of establishment	1,055	12	0
Rents, rates and taxes	732	2	6
Petty construction and repairs	2,194	11	0
Seeds and implements	19	0	0
Other charges	2,048	0	0
Total ..	6,049	9	6

The programme of work on account of which the above expenditures were incurred may be summarised as follows:—

(1) Improvement of stock lots for purity and healthiness of different breeds of silk-worms reared in this province and the continuance of various lots of each of these varieties.

(2) Silk-worm seed production by multiplication of the selected lots under (1) for supply to the rearers by the Government nurseries and the selected rearers.

(3) Raising of crops at the rearers' house and the prevention of diseases to avoid epidemic outbreaks in rearing villages.

(4) Demonstration of improved methods of rearing and education of silk-rearers through sericultural institutions.

(5) Organisation of a specialised class of seed-growers through passed students of sericultural schools and rearers in areas suited for seed production.

Success or failure in the organisation of any of these items will have corresponding reaction on the other heads and will undoubtedly influence the silk trade of the province.

Improvement of stock lots.—This is a very important item of work. It implied the continuance of more than a hundred lots of each variety—*Nistari* and *Chotopolu*—throughout the year, with due regard to proper care and selection during various stages of their development. This work is the fundamental basis of seed production and is practically beyond the capacity of any private seed-rearing concern.

The expenditure incurred for the continuance of the stock lots by selection is shown below:—

Name of nursery.	Stock.	Pay of establishment.	Rearing and cultivation.	Disinfection.	Miscellaneous.	Total.
		Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
Piasbari ..	*Nistari* ..	1,742 6 0	5,516 2 0	729 8 0	15 0 0	8,003 0 0
Mirganj ..	*Do.* ..	450 0 0	688 15 6	50 0 0	....	1,188 15 6
Berhampore ..	*Do.* ..	240 0 0	1,140 1 0	116 4 0	3 14 0	1,500 3 0
Bogra ..	*Chotopolu* ..	1,200 0 0	3,119 0 0	265 12 0	395 7 6	4,980 3 6
Kurseong ..	*Do.* ..	1,055 12 0	1,626 10 0	161 1 0	260 5 0	3,103 12 0
	Total ..	4,688 2 0	12,090 12 6	1,322 9 0	674 10 6	18,776 2 0

Rearing and cultivation.—This item of expenditure includes all expenses relating to rearing of silk-worms and cultivation of the mulberry plantation in the nurseries. A sum of Rs. 3,200 spent on account of demonstration has been included under this head.

In my report for 1924-25 and 1923-24, I had noted the results of manurial tests on mulberry in the nurseries. As the results were sufficiently convincing, it was agreed to lay out Rs. 6,600 from the grant under "Rearing and cultivation" for the manuring and improvement of mulberry lands. Although the nurseries had raised 24,500 *kahons* of seeds during this year in place of 20,000 *kahons* in 1924-25, it is satisfactory to note that in spite of the increased outturn of 4,500 *kahons*, which implies an increased consumption of 4,000 maunds of mulberry leaves, the outturn was raised on a purchase of 10,300 maunds of leaves in place of 11,121 maunds of leaves purcased in 1924-25. It is no doubt true that the increase in the yield of leaves in any year depends to a large extent on seasonal conditions, specially on timely rains. Nevertheless, it shows that the extra expenditure incurred for manuring has been fully recouped. It is hoped that by adherence to a fixed policy to reserve an expenditure of Rs. 25 per bigha for manuring and improvement of mulberry lands for a gradual reclamation of the poor yielding plots in the beginning of a financial year, the present difficulty experienced on account of purchasing outside leaves may to a very large extent be removed.

The purchase of outside leaves cannot be recommended for the following reasons:—

(1) Heavy expenditure on account of cartage and risk on account of the lowering of the quality of leaves, due to fermentation and wastage in transit.

(2) The leaves are often dusty and the chances of infection of diseases are more, as there is no possibility of detecting whether the mulberry lands of the leaf-sellers were manured with litters of silk-worms. This is a serious question for consideration, especially when the litters are not properly decomposed.

Disinfection.—The total expenditure of Rs. 7,198 under "Disinfection" includes the cost of purchase of 763 lbs. of Burgoyne formalin and 2,088 bottles of E. chlorine (20 oz. each) and sulphur for fumigation of rearing houses. It also includes the cost of labour for disinfection work. On the basis of a total outturn of 24,500 *kahons*, the working cost of disinfection for an outturn of one *kahon* came to 4 annas and 8 pies. The working cost per *kahon* for disinfection as I have noted in my report for 1924-25 was 6 annas. This reduction

in the expenditure is to be largely attributed to the use of E. chlorine. It is accordingly arranged to use E. chlorine in future in preference of formalin as the microscopic examination of the various lots of industrial seeds issued during this year showed that the results were in no way less satisfactory than with formalin.

Petty construction and repairs.—During the year under report the grant under 'Petty construction and repairs" was raised to Rs. 16 600 in place of Rs. 8,200 during 1924-25 on the recommendation of the Bengal Silk Committee to construct new rearing-houses and repair the old buildings. The total expenditure of new constructions was Rs. 7,770.

Rewards.—Four passed students of the sericultural schools were granted the reward of Rs. 250 each and three students received Rs. 100 each on account of the first instalment of their reward. The total cost under this head is Rs. 1,300 All the students have registered an agreement to work under departmental supervision for five years.

The question of the enhancement of the reward to Rs. 400 has been administratively approved. Many students are unwilling to accept the reward until it is enhanced to Rs. 400 as the cost of building materials and labour has greatly increased.

Selected rearers and ex-students.—During the year under report the selected rearers and ex-students in Malda have sold 13,205 *kahons* of seeds in place of 6,548 *kahons* during 1924-25. This work was supervised by the 1st Superintendent of Sericulture with the assistance of the Sericultural Inspector and *Joar* Supervisors. The nursery staff had also helped in the examination of moths for the supply of a requisite number of layings to these private seed-growing concerns for their crop. With the extension of this branch of our work, it is becoming urgently necessary that some more posts of demonstrators should be sanctioned as early as possible to examine the moths and to supervise these rearings.

For the districts of Murshidabad and Rajshahi the post of a 2nd Inspector of Sericulture has been sanctioned on the recommendation of the Bengal Silk Committee. A senior Muhammadan Nursery Superintendent has been appointed to this post with effect from the 1st February 1926 with headquarters at Berhampore. The work at Birbhum will, for the present, be arranged by the nursery staff at Kalitha. During this year 16,500 examined layings were issued from Berhampore, Kumarpur and Kalitha nurseries to selected rearers in Murshidabad and Birbhum and 4,200 layings from the 2nd and 3rd circles. The total production of selected rearers during the year may be estimated at 18,000 to 19,000 *kahons* in place of 14,000 to 15,000 *kahons* of 1924-25.

The profit and loss account of the ex-students and selected rearers in the district of Malda during the year 1925-26 is as follows:—

Name of nursery or owner.	Total outturn.		Expenditure and receipts.		Profit or loss.
		K. P.		Rs. A. P.	Rs. A. P.
Dadal Chandra Mondal, Sonatola ..	Seed ..	596 0	Expenditure ..	1,062 6 0	536 6 0
			Receipt ..	1,596 12 0	
Rafatulla Mondal, Biswanathpur ..	Seed ..	412 0	Expenditure ..	724 0 0	172 0 0
			Receipt ..	896 0 0	
Jagabandhu Mondal, Madhugram.	Seed ..	627 12	Expenditure ..	1,147 0 0	227 0 0
	Cocoon ..	27 0	Receipt ..	1,374 0 0	
Laskhan Ch. Ghose, Shahebganj.	Seed ..	127 8	Expenditure ..	203 9 0	375 5 6
	Cocoon ..	259 0	Receipt ..	578 14 6	
Promotha Nath Das, Alipur ..	Seed ..	367 12	Expenditure ..	467 2 0	520 8 0
			Receipt ..	987 10 0	
Fakir Chandra Mondal, Jotedomon ..	Seed ..	300 0	Expenditure ..	476 15 0	253 1 0
			Receipt ..	730 0 0	
Laskhi Kanta Sarkar, Joglulgram.	Seed ..	319 0	Expenditure ..	537 0 0	125 0 0
	Cocoon ..	19 0	Receipt ..	662 0 0	
Laksmi Kanta Saha, Amriti ..	Seed ..	193 0	Expenditure ..	410 0 0	202 8 0
			Receipt ..	612 8 0	
Dinabandhu Mondal, Sersahi ..	Seed ..	312 6	Expenditure ..	435 4 0	481 6 0
			Receipt ..	916 10 0	
	Carried over		Carried over ..		

Name of nursery or owner.		Total outturn. K.	P.	Expenditure and receipts.	Rs.	A.	P.	Profit or loss. Rs.	A.	P.
Brought forward ..				Brought forward						
Amjadali Biswas, Sabeklabhanga ..	Seed ..	385	12	Expenditure ..	318	2	0	444	10	0
				Receipt ..	762	12	0			
Ram Sundar Sarkar, Joginigram.	Seed ..	364	0	Expenditure ..	401	8	0	460	6	0
	Cocoon ..	44	0	Receipt ..	861	14	0			
				Expenditure ..	2,726	10	6			
Gopi Mohan Das, Piasbari	Seed ..	1,347	9	Receipt ..	4,721	11	6	1,995	1	0
Diamond Sericulture, Piasbari ..	Seed ..	632	13	Expenditure ..	1,650	0	0	287	15	3
				Receipt ..	1,937	15	3			
Hazi Das & Co., Piasbari	Seed ..	1,542	8	Expenditure ..	3,871	14	9	1,600	4	0
				Receipt ..	5,472	2	9			
Mondal Ali Brothers, Ramkeli.	Seed ..	630	0	Expenditure ..	1,770	0	0	209	0	0
	Cocoon ..	185	0	Receipt ..	1,979	0	0			
Babu B. K. Sarkar, Piasbari	Seed ..	908	8	Expenditure ..	2,186	15	9	729	14	3
	Cocoon ..	20	0	Receipt ..	2,916	14	0			
				Expenditure ..	1,149	14	0			
Paramanda Das, Badlabari ..	Seed ..	688	0	Receipt ..	1,958	6	0	808	8	0
				Expenditure ..	909	5	3			
Babu Krishna Jiban Sanyal, Kansat ..	Seed ..	232	6	Receipt ..	465	1	3	444	4	0
Messrs. Balragi Brothers, Piasbari.	Seed ..	359	5	Expenditure ..	720	1	0	377	14	0
	Cocoon ..	40	0	Receipt ..	1,097	15	0			
Messrs. Hazi Biswas & Co., Fulbari.	Seed ..	282	0	Expenditure ..	612	0	0	136	10	0
	Cocoon ..	26	0	Receipt ..	748	10	0			
				Expenditure ..	264	0	0			
Md. Nasir Mondal, Ramkeli.	Seed ..	120	0	Receipt ..	276	0	0	11	10	0
	Cocoon ..	40	0	Expenditure ..	2,830	2	0			
				Receipt ..	3,302	4	3	472	2	3
Diamond Sericulture, Amriti ..	Seed ..	1,019	0	Expenditure ..	1,201	7	0	230	11	0
				Receipt ..	970	12	0			
Babu Umesh Ch. Roy, Meharapur.	Seed ..	485	0	Expenditure ..	851	8	0	416	4	0
	Cocoon ..	32	0	Receipt ..	1,267	12	0			
Kunja Lal Mondal, Lalapur ..	Seed ..	427	0	Expenditure ..	563	0	0	524	0	0
				Receipt ..	1,087	0	0			
Satish Ch. Mondal Mahajamapur ..	Seed ..	337	0	Expenditure ..	447	8	0	135	0	0
Debendra Nath Mondal	Seed ..	193	0	Receipt ..	582	8	0			
Total ..	Seed ..	13,205	3	Expenditure ..	27,937	10	3	10,827	6	3
	Cocoon ..	692	0	Receipt ..	38,765	0	6			

Sericultural schools.—At the Berhampore central nursery sericultural class six stipends of Rs. 10 per month were offered to sons of rearers for the session from April 1925 to March 1926. Three students have appeared at the School Final Examination in which 2 passed.

Ten stipends of Rs. 10 per month for one year were also as usual offered at the Rajshahi Sericultural School. As this school is under the direct control of the Director of Agriculture, Bengal, the details are noted in the school report. The rewards to the passed students of this school are, however, paid from the grant allotted to this office.

A sum of Rs. 1,300, as stated under "Rewards", was granted to six passed students of Berhampore and Rajshahi Sericultural Schools to enable them to construct model rearing houses according to the prescribed departmental plan in their villages.

Primary sericultural classes.—The total average daily attendance at the primary schools attached to the nurseries at Kumarpur, Piasbari and Amriti was 80 students who were all sons of local silk-worm rearers. A grant of Rs. 10 per month is sanctioned by the department to each of the primary schools in addition to the District Board contribution towards the pay of the teacher.

At the special request of local rearers, a night class was also held at the Kumarpur central nursery for grown-up rearers. The average attendance was 26. Sanction has also been received to a monthly grant of Rs. 5 to the Kalitha Primary School for sericultural courses to be introduced in that school. It is hoped that from next year a regular course will be arranged at the Kalitha Primary School.

On the recommendation of the Bengal Silk Committee, steps were taken to employ sons of rearers from different rearing villages on daily wages as labourers and to teach them the practice of sericulture. During this year, 127 rearers were accordingly employed in the different nurseries. After a year's training a new batch of these labourers will be recruited.

Demonstration in rearing villages.—At the Bengal Silk Committee meeting held in Malda on the 6th May 1925, under the presidency of the Director of Agriculture, Bengal, the "Need of staff for proper supervision of rearing in the rearers' house" was discussed and the following recommendations were made:—

"The President explained what has been decided in regard to this. Mr Peddie said that the department is only performing half its function if merely confines its attention to the production of disease-free seed which is taken to houses infected with disease and thereby lost in the first generation.

It was pointed out that the present staff have not time to devote a large amount of attention to propaganda in rearers' houses, but it was agreed that immediately after the sale of the seed in proportion of the staff of each nursery should proceed to previously arranged blocks of villages in the neighbourhood of each nursery and carry on propaganda work there. Ultimately, results obtained would form a basis for going to Government for increased staff for propaganda purposes."

The Committee further resolved at the meeting—"That instead of starting a new nursery for the increase of the quantity of disease-free seed supplied to the public, the policy be directed towards increasing the number of selected rearers and the production of disease-free seed through them under supervision of the department."

In pursuance of this recommendation, the Nursery Superintendents were instructed to commence work with the following villages as principal centres:—

Jalalpur	Piasbari nursery staff.	
Kamalpur	Amriti	„ „
Habaspur	Mirganj	„ „
Dangapara	Kumarpur	„ „
Uttarpara and Shankarpur ..	Berhampore	„ „
Bilkandi and Mehedinagar ..	Kalitha	„ „

The operations in Malda were supervised by the Superintendent of Sericulture, Bengal, with the help of the 1st Sericultural Inspector and Assistant Superintendent deputed for village work. These officers also visited many other rearing villages in Malda and took necessary measures against the outbreak of diseases. The demonstration work in the abovenamed villages were entirely meant for the cocoon-rearers, distinct from seed-growers, whose work was supervised by the Sericultural Inspector under the control of the Superintendent of Sericulture, Bengal, as in the past.

The expenditure incurred for Malda is shown below:—

	Rs.
Cost of thread nets	100
Cost of disinfectants	75
Cost of wire-gauze	275

Out of this Rs. 250 worth wire-net was sold to the rearers.

The Collector of Malda, J. Peddie, Esq., I.C.S., had very kindly sanctioned an agricultural loan up to Rs. 2,135 to 86 silk-worm rearers. Without his active support and sympathetic guidance it would not have been possible for the department to make such satisfactory progress in this work in the course of a year. Mr. Peddie had personally visited many rearing villages and discussed with the rearers about their needs.

The points to which special attention was paid in village tours may be summarised as follows:—

(1) General cleanliness.

(2) Renewal of refuse leaf, droppings, etc.

(3) Burning of diseased or dead worms.

(4) Disinfection of rearing-houses, trays, racks, etc.

(5) Fumigation of sulphur.

(6) Improvement of ventilation, by inducing the rearers to fit up more windows or doors in the rearing-houses.

(7) Avoiding the use of wet or immature leaf and the crowding of worms.

(8) The use of *chics* or galvanised wire-netting to keep out flies and improve æration.

(9) The maintenance of an equable temperature as far as possible.

(10) Any other defect which might have been noticed in the course of inspection of individual rearer's work.

In most cases the results were very satisfactory and the outbreak of muscardine was effectively checked in these villages by fumigation of sulphur and adoption of other precautionary measures with regard to delitage and proper regulation of diet.

During this year 22½ maunds of sulphur were sold to the rearers in place of 16 maunds in the last year. As an illustration, it may be noted that village Kamalpur was selected as a centre for demonstration under instructions from Mr. Peddie, as these rearers had reported that they were not able to get any harvest consecutively from three to four crops. Since the demonstration work was taken up in this village, these rearers had reared four crops. Since the demonstration work was taken up in this village, these rearers had reared four crops under departmental supervision, and it can be said without any hesitation that all the crops were highly successful, in spite of the exceptionally unsatisfactory weather conditions during this year. Many rearers are reported to have approached the Collector of Malda with the prayer that their work should also be supervised by the Sericultural officers on similar lines.

It is evident that this work has already stimulated a desire amongst the rearers for departmental help and guidance. Necessary deputation of staff to all the villages according to their requisition is getting practically impossible with the present staff. The remedy will lie to a great extent either in sanctioning more posts of demonstrators or reducing the outturn of the nurseries, to spare necessary staff, if it is intended that this work should be extended. An additional travelling grant will also be required.

The importance of village demonstration cannot be exaggerated. This was advocated by the Oldham Committee in 1908 and also again very strongly emphasised by Dr. Jameson in his last report (1922). Dr. Jameson gave convincing evidence in his report that even the best seed when badly reared will end in disastrous results. If improvement is to be effected, the village rearers will have to be instructed in the causes of disease and induced to go in for improved methods of rearing.

In the 2nd circle seven rearers in Bogra are engaged in seed-rearing under departmental supervision. Propaganda work has been taken up through the co-operative banks in Mymensingh and the General Manager, Court of Ward's Estate, has also offered to help us in the introduction of sericulture in Mymensingh.

For demonstration in the 3rd circle an expenditure of Rs. 2,750 was sanctioned and spent by the 3rd Superintendent of Sericulture in connection with the introduction of silk-worm rearing in the districts in her jurisdiction. The extension of this work will mean an additional grant.

Co-operative societies of silk-worm rearers and reelers in Malda.—The existing societies are reported to be working satisfactorily. These new societies have been started this year and several proposals for new societies have been submitted to the Co-operative Department.

The Co-operative Department is being moved to modify the by-laws, and a proposal has been formulated so that small sums may be advanced to a large number of rearers for the improvement and disinfection of their houses. One such society of new type is under organisation in the Sattari village of the Malda district.

Experimental mulberry plantation at Surul.—The proposal for starting a *Chotopolu* nursery at Sainthia, which is an important *Chotopolu* rearing centre in Birbhum, has been kept in abeyance till the tests on mulberry plantation and comparative observations on the rearing of *Nistari* and *Chotopolu* silk-worms are completed at Surul. The Visva-Bharati University had offered to the Director of Agriculture, Bengal, about 50 bighas of land on a nominal rent for the establishment of a sericultural nursery in Bolepur in preference to Sainthia. One acre has been planted under mulberry during the year and it is proposed to start rearing of silk-worms from next June.

District work at Bankura.—The area under mulberry in this district is now 433 acres in place of 420 acres in the previous year. When the departmental work was organised in 1921 the area was only 300 acres.

During this year 16,000 layings of *Nistari* and 1,600 layings of *Chotopolu* were sold to the rearers from the Government nurseries at Piasbari, Berhampore and Bogra. For the first time an attempt was made to rear *Barapolu* layings at Morar and 200 layings were supplied from the Kalitha nursery in January last. The cocoons had spun splendidly in February, and the result has been very satisfactory. It is probable that this race may be introduced in this district in the course of a few years as a valuable annual crop. The cocoons spun at Bankura were of much superior quality than what was obtained with the same stock in Murshidabad in the same year.

The work at Siromonipur has been much improved since the post of a demonstrator was sanctioned for this village with effect from February 1925. Although the work was started with one rearer, at present sixteen rearers have started rearing in that village. The area of activity in this centre has been extended to Jadabnagar, Krishnaganj and other neighbouring villages. In view of the fact that the silk industry had almost died out in these localities, this progress made in the course of one year is indicative of considerable expansion in the near future if the work is properly organised by provision of an additional overseer and the carrying on of demonstration on the lines adopted in Malda during this year.

Owing to the difficulty in sending seeds from Malda or other distant localities, it was decided to allow the rearers to continue several generations by using the outturn of the first crop as seed for the second crop and even for a third crop. The Sericultural Officer and his staff had regularly supervised their rearing and the results were satisfactory. It may be mentioned that the *Chotopolu* seeds from Bogra reared in Puniasole gave even 120 times production from a *kahon* of seed.

The activities which were confined to 20 villages in 1924-25 have now been extended to 53 rearing villages. In view of the increased demand of seeds in the district and the extension of the area under mulberry, it may be said that the starting of the Vishnupur nursery is an urgent necessity. The extension of work in Midnapore may also be taken up by supplying seeds from Vishnupur.

2nd Circle.—The main work of this circle is the selection of the *Chotopolu* stock lots in the nurseries at Bogra and Kurseong. In my last year's report I have already dealt in detail on the unsatisfactory condition of the village seeds of this breed of silk-worms. Through careful selection in the course of these two years, several stock lots varying from 2 to 5 per cent. pebrine have been secured. As this breed had been impoverished through generations of diseased percentage for more than a century, it is observed that in spite of this appreciable decrease in the percentage of disease and the continuance of the nursery lots in proper condition, the department is not yet in a position to guarantee the crop at the rearers for rearing on a big scale. The *Chotopolu* appears to lack in resistance to outward infection which is unfortunately too serious a drawback at the rearers' house. Nevertheless it has been found that the seeds sold direct from Bogra and Kurseong to the rearers in Malda have given satisfactory results. At Puniasole in Bankura the Bogra *Chotopolu* seeds gave such striking results as 100 to 120 times production from a *kahon* of seed. The crops raised in the nurseries in the first circle from Bogra and Kurseong seeds gave perfect spinning and the percentage of pebrine in the industrial seeds were below 5 per cent. in each lot.

In addition to the selection of *Chotopolu* the Kurseong nursery also continued the stock of the univoltine breeds, *viz.*, Kashmir, Chinese and *Barapolu* silk-worms.

During the year under report two small rearing-houses have been constructed at Bogra at a cost of Rs. 800 and one rearing-house at Kurseong at Rs. 930.

Dacca.—The small nursery at Dacca has been giving excellent results both on the yield of leaves and in the corresponding outturn of cocoons. As before *Nistari* worms were successfully reared there, and the outturn sent to Malda for disposal. There has been a total outturn of 175 *kahons* of *Nistari* from an area of about three bighas. The yield of leaves averages 70 to 80 maunds per bigha This is very encouraging and shows that the Dacca soil is quite suitable for mulberry plantation. It is proposed to extend the area to 15 bighas by next year.

Mymensingh.—The sericultural operations at Mymensingh organised by the Co-operative Central Bank are being pushed on with success. In addition to the demonstration farm at Charkamaria, with an area of about 2 bighas and a small rearing-house, another plantation has been set up this year at Joydharkhali, near Kaoraid railway station. With the primary object of introducing the silk industry amongst the people of the district, the Central Bank would like to start demonstration farms at places where there are groups of rural co-operative societies, so that the members thereof might have actual training in sericulture and thus ultimately be in a position to take to the profession. The scheme is at present financed by the Central Bank with the idea that ultimately the rural societies may undertake the responsibility.

Dhanbari.—Demonstration on the rearing of *Eri* silk-worms is being carried on by overseer and several crops of cocoons were raised by the rearers.

Dinajpur.—In the year 1924, sericultural exhibits were sent to Nekmurd Mela at Dinajpur. These were very much appreciated by the people, who showed keen eagerness to know more about the industry and the possibility of its introduction in the district. The Collector of the district—Mr. J. De, I.C.S.—took up the idea, and it is solely at his instance that a small beginning was made as an experimental measure. He placed an area of about a bigha within his compound at our disposal, and the plantation was set up in September 1924. The primary object was to ascertain whether the mulberry plantation would prove successful and, if so, to start demonstration in silk-rearing. Finding the plantation to be a successful one, Mr. De had a small rearing-shed built at the expense of the District Board for the rearing demonstration. The shed was completed by the beginning of February last. It is located in the Kutchery compound, so that the numerous people of the district attending the Court might get an opportunity of actually observing how the rearing of silk-worm is done. The first experiment on rearing has been taken up with 100 layings of *Nistari*. The rearing is in the charge of an overseer from Bogra nursery. If the demonstration proves successful, which it is hoped to be, and provided the people could be pursuaded to appreciate its value as a cottage industry, there is every possibility for its introduction in the district on a much larger scale. The greatest advantage of the district lies in its close proximity to Malda and, consequently, there will be less of that trouble in marketting the outturn.

3rd Circle.—During the year under report, the 3rd Superintendent of Sericulture was engaged in the introduction of silk-worm rearing in the various districts in her jurisdiction. As a result of this propaganda work, about 60 bighas of mulberry land were planted during this year and silk-worm rearing has been introduced in the neighbourhood of Alipore, Behala, Tollygunge, Chinsura, Serampore and Khulna amongst the educated classes in these localities. It is reported that all this area now put under mulberry were waste lands which have so far been giving no return to the owner. In addition to the rearing of mulberry-feeding silk-worms, the rearing of *Eri* silk-worms on castor leaves is being taught to the local people as the castor plants are fairly abundant and self-sown in the areas in the outskirts of Calcutta.

The programme suggested by Miss Cleghorn for these new areas may be stated to be—

(1) The rearing of one high-yielding annual crop in the cold season during February and March.
(2) One *Chotopolu* crop in October to fit in with the "Bund" required by the rearers.
(3) One or more *Nistari* crops from April to August.
(4) The rearing of *Eri* silk-worm on castor leaves along with the rearing of mulberry-feeding silk-worms.

Exhibition.—During the year under report departmental exhibits were sent to the exhibitions held in Gopipara, Krishnagar, Faridpur, Khulna, Suri, Chinsura, Dinajpur, Dacca and Bogra.

P. C. CHOUDHURY,
Deputy Director of Sericulture, Bengal.

APPENDIX XL.

Annual Report of the Sericultural School, Rajshahi, for the year 1925-26.

Administration.—The institution which was originally started by the local zamindars in 1897 was made over to Government in 1907; since then it has been managed by a local committee with the Collector as Chairman, under the control of the Director of Agriculture, Bengal.

Curriculum.—The school teaches the following subjects:—

(*a*) Improved method of mulberry cultivation and the use and effect of different manures on the outturn of leaves.

(*b*) Microscopic selection of seeds.

(*c*) Use of different disinfectants.

(*d*) Detection and prevention of silkworm diseases.

(*e*) Rearing of silk-worms.

(*f*) Reeling.

Land.—The school has 22 bighas of land in possession at Kadirganj within a mile of the school, of which 13 bighas are under mulberry cultivation. A portion of the land used to go under water during the rains; this has been prevented partly by providing better drainage and partly by raising the level of the land by means of earth from the surrounding drains. Though heavily manured, the land does not yield expected outturn of leaves as the mulberry plantations have been extremely thinned on several plots. For this reason, about 3 bighas of land have been reclaimed for fresh plantation during the year under report.

Seed supply.—Three crops of *nistari* worms and one crop of *choto-polu* were raised during the year.

The total outturn from the four crops was 615 *kahans*, 3p yielding Rs. 2,141-11 by way of sale-proceeds as compared to 491 *khahans* with Rs. 1,582-7-9 as sale-proceeds during the year 1924-25.

As in the last year the *choto-polu* crop of the school was not very successful. This is partly due to bad leaves and partly to want of healthy seeds.

Teaching staff.—It consists of a headmaster and one rearer. The former teaches the principles of scientific sericulture and practical rearing is taught with the help of the rearer. There is a reeler, who instructs the students in practical reeling.

Students.—During the year under report, 12 students were on the roll, of whom eight appeared in the Final Examination and seven passed. Of these seven students, five belong to Malda, one to Rajshahi and one to Birbhum, and among them two were Muhammadans and five Hindus.

At present only sons of professional rearers are admitted in the school; it is desirable that sons of *bhadralok* classes should be admitted into the school if they guarantee to stick to the profession, as this is likely to reduce unemployment among the educated middle classes. Complaints have been received from the passed students of the school about the inadequacy of the Government grant of Rs. 250 in meeting the cost of construction of a model rearing house. This has, indeed, stood in the way of accepting Government grant in the case of many poor passed students. Some of the ex-students of the school have started independent seed growing business under Government supervision, and they are faring well. Their seeds have gained almost as much popularity among the "Basnees" as seeds from Government nurseries.

Inspections and visits.—The school was visited by the Commissioner of the Rajshahi Division during the year under report.

Meetings.—Three meetings of the Managing Committee of the school were held during the year under review.

Receipt and expenditure.

Receipt.	Rs.	A.	P.	*Expenditure.*	Rs.	A.	P.
Seed cocoons (605*k* 3*p*). ..	2,140	5	0	Pay of the staff	941	9	0
Cocoons 10*k*.	1	6	0	Travelling allowance	254	2	0
Silk (1 sr. 3¼ tola)	13	2	0	Stipend	953	14	3
Layings of eggs (125)	1	0	0	Books and periodicals ..	24	10	0
Sulphur (1 sr.)	0	8	0	Instruments, etc.	142	5	6
Uloo grass	13	8	0	P. C. R.	393	15	0
Government grant	5,733	6	9	Rents, rates, etc.	282	13	0
				Disinfection	198	3	6
				Rearing and cultivation ..	1,545	1	6
				Office and miscellaneous ..	906	13	0
				Sale proceeds	2,169	13	0
Total ..	7,903	3	9	Total ..	7,903	3	9

Microscopes.—Two microscopes have been purchased direct from Messrs. A. Nachet of Paris at a cost of Rs. 130. This brings the total number of serviceable microscopes to ten.

Discipline.—No case of breach of discipline occurred during the year under report.

H. D. MUKHERJEE,

Secretary, Sericultural School, Rajshahi.

APPENDIX XLI.

Glossary.

Vernacular.	English name.	Scientific name.	Remarks.
Aghani ..	Winter paddy.		
Aughran bund ..	It lasts from about the middle of November to the middle of December for silk crops.		
Aman ..	Winter paddy ..	*Oryza sativa.*	
Arhar ..	Pigeon pea ..	*Cajanus indicus.*	
Aus ..	Autumn paddy ..	*Oryza sativa* ..	It is called *Ghaiya* in Kalimpong district.
Badshabhog ..	Varieties of paddy	*Oryza sativa* ..	*Dhanasi, Mansara, Ramtulsi, Ramtomarsi, Timurary and Touli.* These are the varieties of paddy of the district of Kalimpong.
Bhatkalamkati ..			
Bhatmuri ..			
Chapalo ..			
Charnock ..			
Dudkhani ..			
Depi ..			
Digha (broadcasted *aman*).			
Dudsar ..			
Elai ..			
Gangajali ..			
Gazia ..			
Indrasail ..			
Jhengasail ..			
Kataktara ..			
Kataribhog ..			
Marichbuti ..			
Nagra ..			
Panisail ..			
Sonamail ..			
Suryyamukhi ..			
Tilakkachari ..			
Bhodes ..	Clayey deposit in old tanks.		
Beel land or *bhil*	....	....	Low-lying lands which serve as reservoirs of flood water during the rains, generally old beds of silted up rivers and natural depressions.
Bogi seed ..	Seed of a variety of jute called *bogi*.	*Corchorus olitorius.*	
Buri ..	A variety of cotton	*Gossipium sp.*	
Choto-polu ..	A variety of silkworm.		
Dharwar ..	A variety of cotton	*Gossipium, Hirsutum sp.*	
Dhaincha ..	....	*Sesbania, Aculeata.*	
Deshi ..	Indigenous.		

Vernacular.	English name.	Scientific name.	Remarks.
Deshitunt or *tut* ..	Indigenous ..	*Morus Indica* ..	It is called *Chata kimbu* in Kalimpong district.
Gangajali ..	A variety of wheat	*Triticum sativum.*	
Gur ..	Molasses.		
Joar ..	*Sorghum* ..	*Sorghum vulgare.*	
Kahan ..	1,280 units make one *kahan.*		
Kalai or *mati kalai*	A variety of pulse	*Phaseolus radiatus.*	
Kharif season ..	Rainy season.		
Khesari ..	A variety of pulse	*Lathyrus sativa.*	
Mela ..	Fair.		
Mung ..	A variety of pulse	*Phaseolus mungo.*	
Nistari ..	A variety of silk-worm.		
Rabi season ..	Spring season.		
Til ..	Gingelly ..	*Sesamum indicum.*	
Ufra ..	An eel work disease of rice.	*Tylenchus sp.*	
Dacca *Bas** ..	Varieties of jute ..		
Fandak ..			
Hooghly *Deshi*†		*Corchorus capsularis.*	
*Kakya Bambai**		†*Corchorus olitorius.*	
*Similkandi** ..			
Rhea ..	A kind of fibre ..	*Bochmeria Nivea.*	
Sida ..		*Sida Rhombifolia var.*	
Sisal Hemp ..		*Agave sp.*	
Bhengi ..	Varieties of tobacco	*Nicotina tobaccum.*	
Havena ..			
Matihari ..			
Naokhol ..			
Orinocco ..			
Ohio ..			
Pennsylvanian ..			
Thotnompotty ..			
White barley ..			
Gandari ..	Varieties of sugar-cane.	*Saccharum officinarum.*	
Shamsara ..			
Khagri ..			
Vendamukhi ..			
Bajra ..	A kind of fodder ..	*Pennisetum typhoideum.*	
Japanese millet		*Pennisetum typhoideum spar.*	
Juar ..		*Andropogon Sorghum.*	

A. D. O. C.—Rotting process necessary for preparing artificial manure.

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GOVERNMENT OF BENGAL.

AGRICULTURE AND INDUSTRIES DEPARTMENT.

Agriculture.

CALCUTTA, THE 27TH APRIL 1927.

RESOLUTION—No. 31 T.-A.I.

Minister-in-charge : The Hon'ble Hadji Mr. A. K. Ghuznavi.

READ—

The report of the operations of the Department of Agriculture, Bengal, for the year 1925-26.

Administration.—Mr. Finlow, the Director of Agriculture, was on leave from 2nd July 1925 to 18th February 1926 when Dr. Hector, First Economic Botanist, officiated as Director. The Assistant Director of Agriculture Mr. McLean went on eight months' leave on the 28th February 1926 and was succeeded by Mr. Smith. Mr. A. R. Malik held charge of the office of the Deputy Director of Agriculture, Northern Circle, for eight months from 15th March 1926. Mr. J. N. Sarkar continued to officiate as Deputy Director of Agriculture throughout the year.

2. **Agricultural Education.**—The scheme for agricultural education in High English and Middle English schools on the Punjab lines, details of which are given in the report, was finally approved by Government after the close of the year. Funds for the purpose have been provided in the budget for the current financial year, and it is hoped to give effect to it as soon as possible.

With regard to the scheme for higher agricultural education at the proposed Agricultural Institute at Dacca, it has now been definitely decided to proceed with the scheme and to construct the necessary buildings up to the minimum requirements as soon as funds are available. As the Royal Commission on Agriculture is expected to make valuable suggestions in regard to the scheme, it is proposed to await the recommendations of the Royal Commission with regard to such questions as the standard of qualification for admission and collaboration with the Dacca University in the matter of the teaching of pure science to the pupils of the institute.

It is regrettable that the secondary agricultural school at Dacca is languishing for want of popular support. In the resolution on the departmental report for 1924-25 a hope was expressed that every possible step would be taken to make the school more popular and to attract a sufficient number of students to it. The Hon'ble Minister considers that it is now time for reviewing the position of the school and for taking measures for increasing the usefulness of this institution. He also trusts that the annual report of the Director of Agriculture will in future contain a detailed account of the working of the school.

3. **Research and Experiment.**—On the research side interesting experiments are being carried on in the Botanical (including Mycology and Entomology), Fibres, and Chemical sections.

In the Botanical section improved races of departmental paddy have been evolved, and the problem of securing their general adoption in the agricultural practice in the localities suited to them has been engaging attention. Unlike jute seed the distribution of paddy seed is attended with difficulties. In the first place, the cultivators keep their own seed and do not obtain a supply every year ; secondly, as several varieties of different durations and qualities are grown side by side, the seed rapidly gets mixed ; and thirdly, owing to prohibitive cost of transport it is not possible to move paddy seed to any distance. To solve this problem a scheme has been inaugurated for the organisation of small paddy seed farms through the agency of agricultural associations or influential cultivators. It is proposed to supply to these seed farms fresh seed every alternate year from Government farms and to multiply it for distribution in the locality. Thirteen paddy seed farms were introduced in the districts of Dacca and Mymensingh during the year. A commencement has also been made in other districts for which suitable departmental races are available.

It is reported that a fungus (*Phytophthera*) has been definitely identified as the cause of the betel-vine disease ; and it is hoped that it will now be possible to devise effective means for combating the disease which has done considerable damage to the betel-vine crop in different parts of the province.

As a result of prolonged investigations it has been discovered that organic refuse, *e.g.* sugarcane pith and leaves, weeds, waste straw, etc., when treated with cattle urine becomes immediately useful as plant food, being slightly richer in nitrogen than rotted cowdung. Seventy-three tons of this artificial farm yard manure have been prepared at the Dacca Farm out of the farm refuse.

In the Chemical section sugarcane and tobacco continue to receive attention. Yellow *Tanna* cane and C. O. 213 have continued to spread. During the year demonstrations of yellow *Tanna* were made in sugarcane growing localities with a view to introducing this variety in those areas. In the Jessore district demonstrations were given, on a working scale, of the value of liming the collecting pots and the efficiency of the McGlashan furnace for boiling date palm juice.

In the resolution on the annual report for 1924-25 a reference was made to the steps taken for the collection of data with a view to drawing up a scheme of campaign against the water hyacinth pest. The necessary data have since been collected ; and experimental clearance operations have been undertaken in the Madaripur *Beel* area with a conveyor specially constructed for the purpose. The question of the policy to be adopted in dealing with the weed is now engaging the attention of Government.

4. **Improvement of the farming industry, agricultural stations and farms: Animal husbandry: Agricultural engineering and supply of improved seed.**—During the year a commencement was made with the construction of buildings for the Malda and Rangamati farms. The Dinajpur farm buildings were made over to the Department in September 1925, while those of the Mainaguri farm were handed over after the close of the year.

An area of about 450 acres of land at Nadia known as the Company Bagan was taken over from the Krishnagar Municipality after the close of the year and placed in charge of the Collector as a *khas mahal* pending its utilisation for the purposes of the Agricultural Department. Schemes

for the establishment of a district farm as also a dairy farm in this area are at present under consideration. In the meantime it has been proposed by the Director of Agriculture to let out the area on the *barga* system which is in vogue in the Kishoreganj farm for the cultivation of improved crops suitable for the tract. A scheme for the establishment at Baraset of a district farm for the 24-Parganas is also under consideration.

In the district farms at Suri and Bankura important researches on paddy, cotton, rabi pulses and oil-seeds as well as fodder crops are being conducted with a view to evolving crops suitable to the rolling upland tract in western Bengal.

In the Kishoreganj farm which is run in collaboration with cultivators on a modified *barga* system, a net profit of about Rs. 2,000 was obtained during the year at a total expenditure of Rs. 2,570 including a capital expenditure of Rs. 1,087.

The continued growth of private farms in the Presidency, Burdwan and Rajshahi Divisions, which numbered altogether 100 in the year, affords a striking proof of the success achieved by the department in introducing scientific agriculture in the province. These farms are conducted under the advice of the officers of the Agriculture Department.

At the Rangpur cattle farm as also at the Dacca farm the usual programme for the improvement of the breed of cattle was carried on. A Live-stock Expert has been recently appointed. It is hoped that under the expert guidance of this officer it will now be possible to make an advance in the direction of popularising the pedigree bulls evolved by the department. The Hon'ble Minister in charge attaches great importance to the improvement of the breed of cattle in Bengal on which the improvement of agriculture largely depends, and he will watch with interest the activities of the Live-stock Expert towards that end.

With the provision of funds in the current year's budget for the appointment of an Agricultural Engineer, it is hoped to tackle the important problem of agricultural engineering in the near future.

5. **Seed distribution.**—Owing to the high prices of jute there was a heavy demand for departmental jute seed which it was found difficult to meet. During the year 110 tons of departmental jute seed were sold by the Agent for the sale of departmental seed.

With the object of securing a rapid extension of the use of the improved races of jute the London Jute Association made a generous offer of a contribution of £1,500 for the free distribution of departmental jute seeds. This offer was accepted by Government and the distribution of seed took place early in 1927.

6. **Propaganda and dissemination of agricultural information.**—The Hon'ble Minister is gratified to observe that the efforts of the department are proving successful in gradually winning public appreciation of the value of its work. Extensive propaganda is, however, necessary in order to induce a wider adoption of the improved methods recommended by the department; and with this end in view Government have recently decided to appoint seven additional district agricultural officers in the districts of Chittagong, Nadia, 24-Parganas *cum* Howrah, Khulna, Midnapore, Noakhali and Hooghly as soon as funds become available. The Hon'ble Minister also notes with satisfaction that several District Officers, notably those of Nadia, Malda, Faridpur, Rangpur and Hooghly, have given their special attention to the agricultural needs of the districts in their charge; and that every opportunity is taken of collaboration between the sister departments of agriculture and co-operation.

7. **Sericulture.**—The main work of the Government nurseries is the issue of disease-free seed of *Nistari* and *Chotopolu*, while in the Berhampore central nursery the reafing of *Nistari* stock for supply to other nurseries and to selected rearers was undertaken in addition to the supply of seed to the professional rearers. The nurseries produced 21,262 *kahans* of seed cocoons and the receipts amounted to Rs. 71,242. The decrease in receipts is attributed to a fall in the price of cocoon consequent on the slump in the silk market.

The policy of the propagation of disease-free seed through the agency of selected rearers under the departmental supervision was continued. During the year the selected rearers are reported to have raised between 18,000 to 19,000 *kahans* of seed.

Satisfactory results were obtained from the demonstration and propaganda work undertaken in certain villages in the districts of Malda, Rajshahi, Murshidabad and Birbhum towards the introduction of improved methods and the production of disease-free seed. An interesting development in the revival of the silk industry took place in the Bankura district where departmental activities have now been extended to 53 rearing villages.

8. The Government of Bengal (Ministry of Agriculture) acknowledge the good work done by departmental officers in the administration of the department, during the year of report. Their thanks are also due to the District Officers and non-official gentlemen who have assisted the department in various ways in furthering the agricultural development of the province.

By order of the Government of Bengal

(Ministry of Agriculture),

R. N. REID,

Secretary to the Government of Bengal (offg.).

No. 2680.

Copy forwarded to the Director of Agriculture, Bengal, for information.

J. C. SEN,

Assistant Secretary to the Government of Bengal.

CALCUTTA,

AGRI. AND IND. DEPT.,—*Agri.*

The 9th May 1927.

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